



USER'S MANUAL

LC-8521

DOT MATRIX PRINTER

CE
Manufacturer's Declaration of Conformity

EC Council Directive 89/336/EEC of 3 May 1989

This product, has been designed and manufactured in accordance with the International Standards EN 50081-1/01.92 and EN 50082-1/01.92, following the provisions of the Electro Magnetic Compatibility Directive of the European Communities as of May 1989.

EC Council Directive 73/23/EEC and 93/68/EEC of 22 July 1993

This product, has been designed and manufactured in accordance with the International Standards EN 60950, following the provisions of the Low Voltage Directive of the European Communities as of July 1993.

The above statement applies only to printers marketed in EU.

Ambient Noise Statement

Machine Noise Information Ordinance 3. GSGV, January 18, 1991: The sound pressure level at the operator position is equal or less than 70 dB(A) according to ISO 7779.

The above statement applies only to printers marketed in EU.

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IBM PC, IBM Proprinter X24E, IBM Proprinter XL24E, IBM Proprinter X24, IBM Proprinter XL24: International Business Machines Corporation.

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About this manual

This manual describes how to set up, use, and care for the Star LC-8521 printer. The following is a list of what you can expect to find in each chapter.

- Chapter 1** Choosing a place for your printer, unpacking and setup, ribbon cassette installation, loading paper, connecting to your computer
- Chapter 2** How to use the control panel
- Chapter 3** How to use the printer's Electronic DIP Switch (EDS) Mode to set up the printer to match the needs of your system and software
- Chapter 4** How to set up for printing with Microsoft Windows 3.1, how to prepare for printing, how to print a document
- Chapter 5** How to set up for printing with Microsoft Windows 95, how to prepare for printing, how to print a document
- Chapter 6** How to set up for printing with MS-DOS
- Chapter 7** Selecting the best type of paper, adjusting for paper thickness, manual sheet feeding, clearing paper jams
- Chapter 8** Optional accessories that are available for your printer
- Appendix A** Troubleshooting
- Appendix B** Specifications
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Chapter 1: Printer Setup

This chapter contains important information on setting up your printer. Be sure to read this chapter carefully before using the printer for the first time. In this chapter you will learn about:

- Choosing a place for the printer
- Unpacking and setting up the printer
- Installing the ribbon cassette
- Loading paper
- Connecting to your computer

Choosing a place for the printer

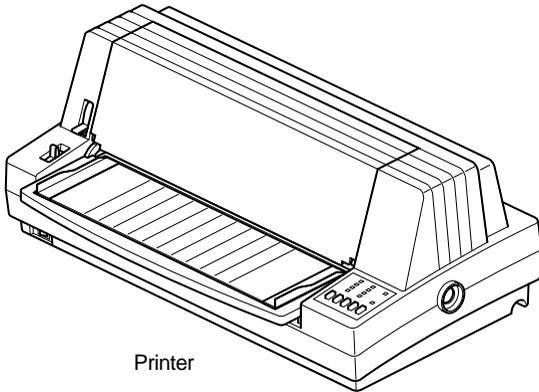
Before actually unpacking the printer, you should take a few minutes to think about where you plan to use it. Remember the following points when doing this.

- ✓ Choose a firm, level surface where the printer will not be exposed to vibration.
- ✓ The power outlet you plan to connect to for power should be nearby and unobstructed.
- ✓ Make sure that the printer is close enough to your computer for you to connect the two with your printer cable.
- ✓ Allow six inches (15 centimeters) of free space on either side of the printer. If you are going to use fanfold paper, make sure that there is adequate space for paper behind the printer.
- ✓ Make sure that the printer is not exposed to direct sunlight.
- ✓ Make sure that the printer is well away from heaters.
- ✓ Make sure that the surrounding area is clean, dry, and free of dust.
- ✓ Make sure that the printer is connected to a reliable power outlet. It should not be on the same electric circuit as copiers, refrigerators, or other appliances that cause power spikes.
- ✓ Use a power outlet that matches the power rating noted on the label affixed to the bottom of your printer.
- ✓ Make sure that the room where you are using the printer is not too humid.

2 Printer Setup

Unpacking the printer

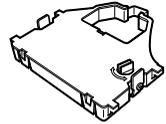
Check to make sure that the carton contains each of the items shown in the following illustration.



Printer



Platen knob



Ribbon cassette



User's manual



3.5" Floppy disk

If anything is missing, contact the store where you bought the printer and ask them to supply the missing part. Note that it is a good idea to keep the original box and all the packing materials just in case you need to pack the printer up again and send it somewhere at a later date.

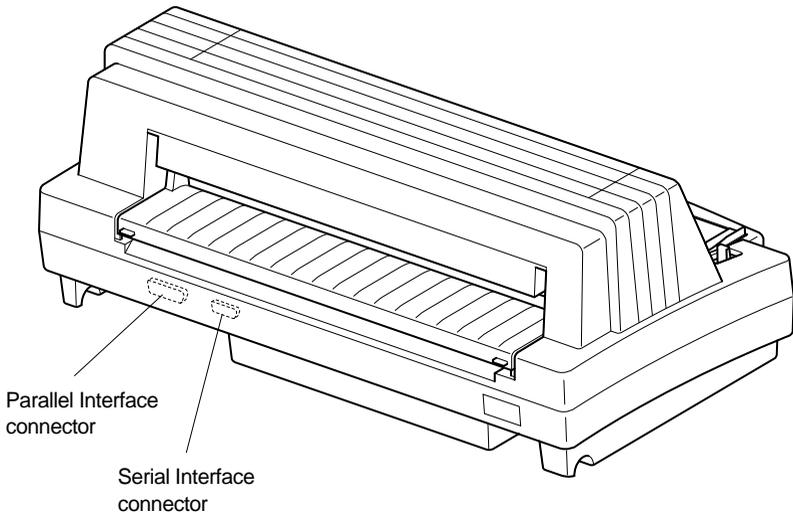
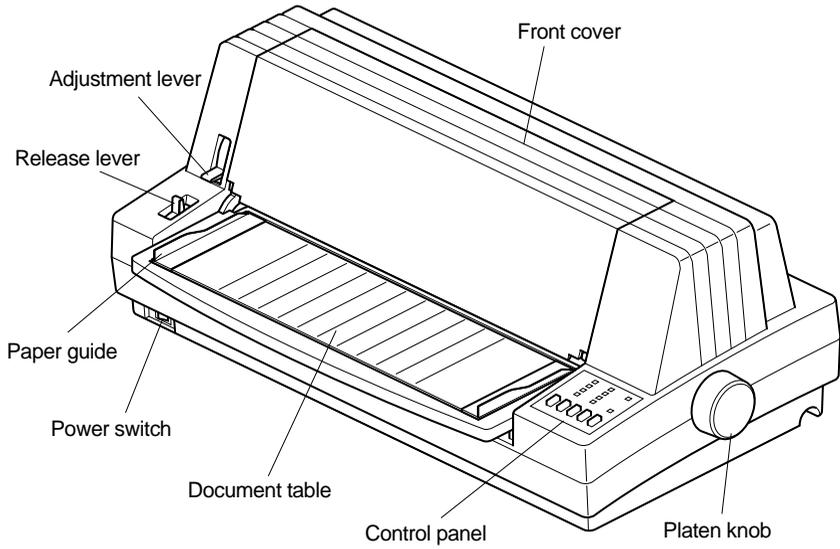
A serial-to-parallel interface converter (SPC-8K) and a push tractor unit (CT-15HA) are also available as an option. Consult your dealer for details.

Important!

There are several versions of this printer designed for different voltages. It is not possible to change the voltage of a printer. If the voltage shown on the label on the bottom of your printer does not match the voltage for your area, contact your dealer immediately.

General guide

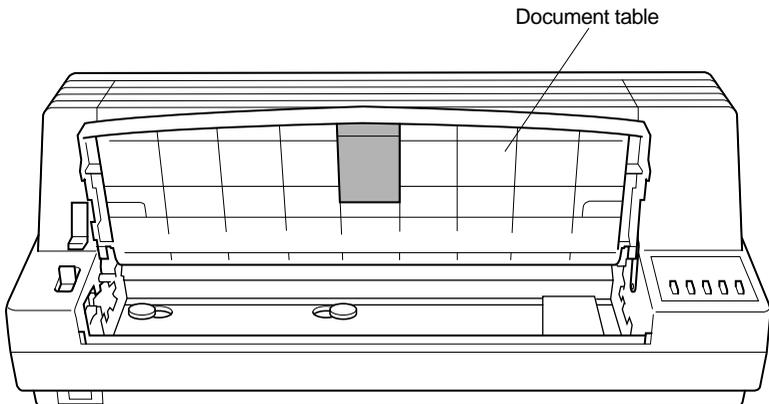
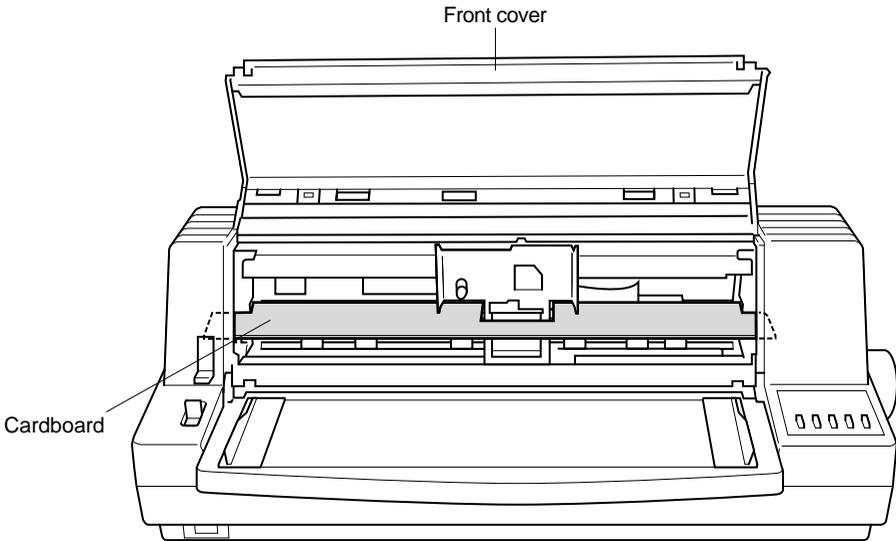
The following illustrations show the major components of your printer.



4 Printer Setup

Removing the protective materials

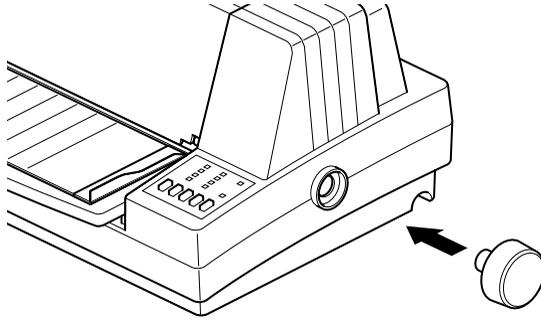
Two packing materials are inserted into the printer to protect components during shipping. Before using the printer, be sure to remove all packing materials from inside the front cover and the document table as shown in the illustration.



Installing the platen knob

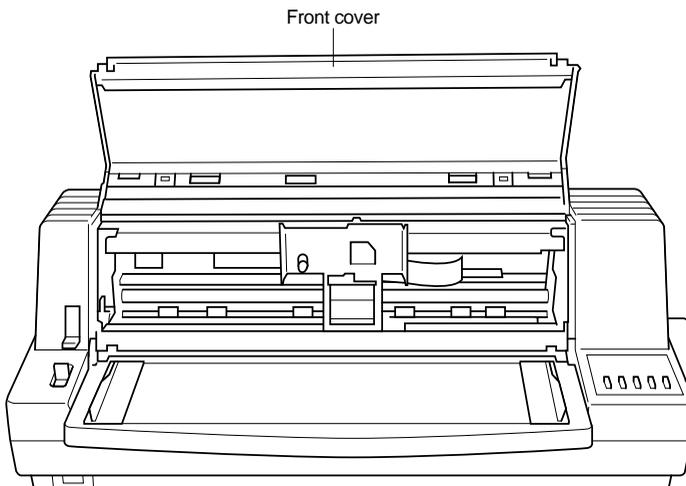
The platen knob is packed into a recess in the packaging material.

- ❑ Install the knob on the shaft located inside the large hole on the right side of the printer. Make sure that the flat side of the shaft is aligned with the corresponding flat surface inside the knob's spindle. Press the knob carefully but firmly into place as far as it will go.



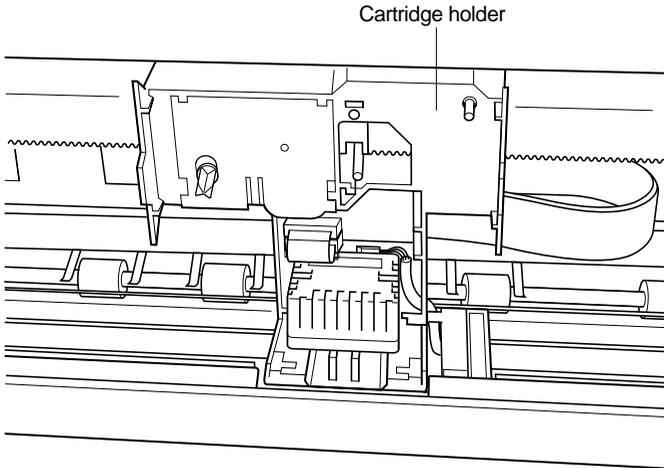
Opening the front cover

- ❑ Hook your fingers under the two small tabs on either side of the front cover and pull forward and up to swing the front cover open.



Installing the ribbon cassette

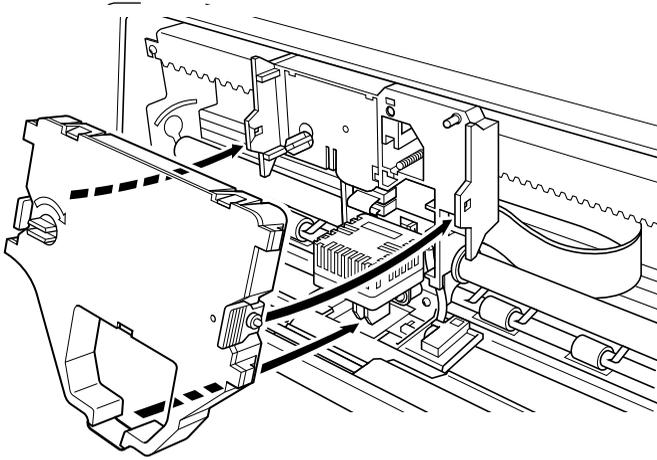
- Make sure that the printer is unplugged from its power outlet.
- Open the front cover of the printer.
- By hand, move the cartridge holder to the center position of the paper guide where there is a cutout to allow easy installation and removal of the ribbon cassette.



Important!

Never try to move the print head while the printer is plugged into a power outlet. Doing so can damage the printer. If you have just used the printer, let the print head cool for a few minutes before you touch it.

- Remove the ribbon cassette from its package.
- Rotate the knob on the ribbon cassette clockwise to take up any slack in the ribbon.
- Carefully place the cassette onto the cartridge holder making sure that the spindle of the holder fits into the socket on the bottom of the cassette.



- Press down gently but firmly on the cassette until it snaps securely into place.
- Rotate the knob on the cassette again to take up any slack.
- Close the front cover of the printer.

Important!

Printing that is poor quality or too light is almost always due to a ribbon that is simply worn out or “used up.” If you experience problems with print quality, check the condition of the ribbon. If the black part looks gray and well-worn, replace the ribbon with a new one.

Removing the ribbon cassette

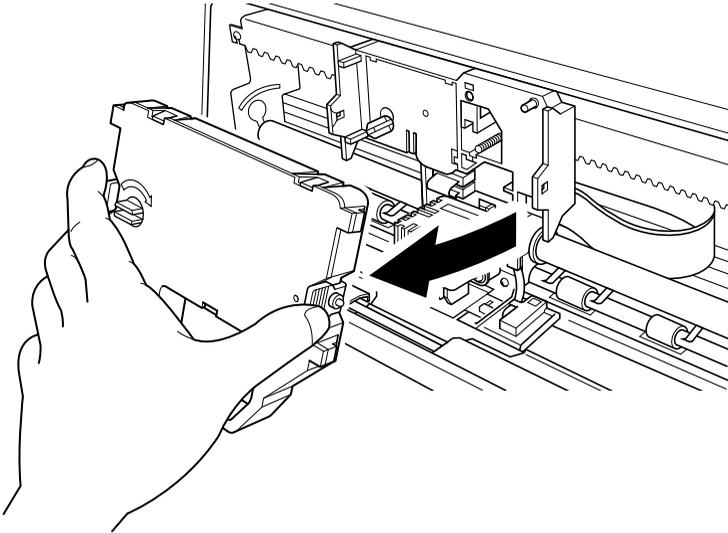
Use the following procedure to remove the ribbon cassette from the printer when you want to replace it with a new one.

- Make sure that the printer is unplugged from its power outlet.
- Open the front cover of the printer.
- By hand, move the cartridge holder to the center position of the paper guide where there is a cutout to allow easy installation and removal of the ribbon cassette.

Important!

Never try to move the print head while the printer is plugged into a power outlet. Doing so can damage the printer. If you have just used the printer, let the print head cool for a few minutes before you touch it.

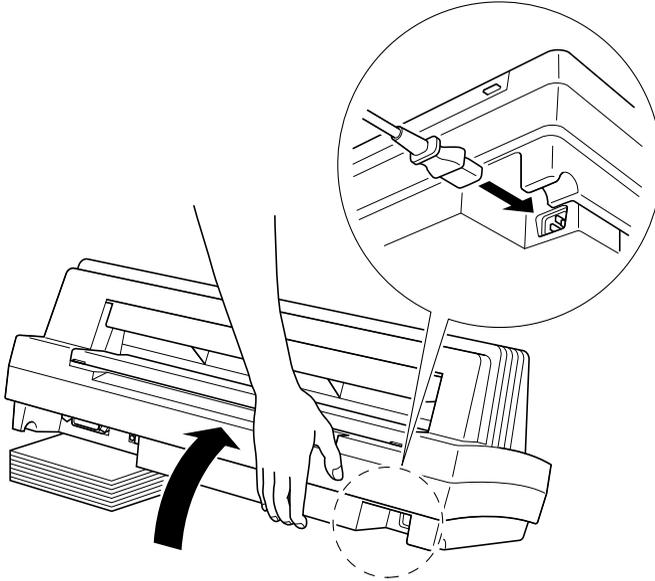
- ❑ Using your thumb and forefinger to squeeze the two tabs on the ribbon cassette towards the center, carefully remove the cassette from the holder.



- ❑ Use the procedure under “Installing the ribbon cassette” on page 6 to install a new cassette.

Connecting to a power outlet and turning power on and off

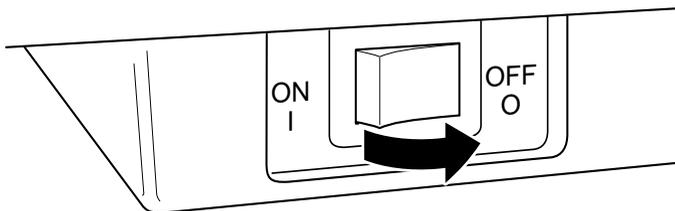
- ❑ Lift up the back of the printer and insert two books or other similar objects underneath it to keep the printer raised and connect the power cord.
- ❑ Plug the power cord of the printer into a standard power outlet whose voltage matches the power rating noted on the label affixed to the bottom of your printer.



Caution!

If the voltage marked on the bottom of your printer does not match the voltage from the outlet you are using, do not plug in the power cord. Contact your dealer for assistance.

- ❑ Set the switch on the front of the printer to ON to turn power on, and to OFF to turn power off.



Caution!

Whenever you turn off the power, wait at least five seconds before turning it back on; otherwise you may damage the printer.

We recommend that you unplug the printer from the power outlet whenever you do not plan to use it for long periods. Because of this, you should locate the printer so that the power outlet it is plugged into is nearby and easy to access.

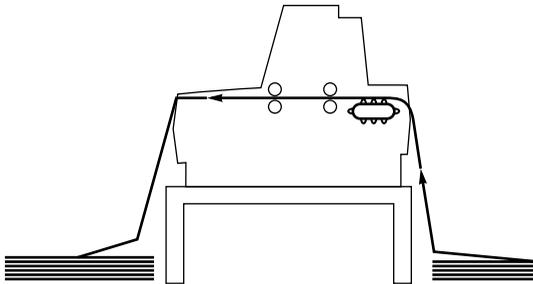
At this point you may want to perform a test of the printer to make sure it is working properly. See page 70 for details on how to perform tests.

Loading fanfold paper

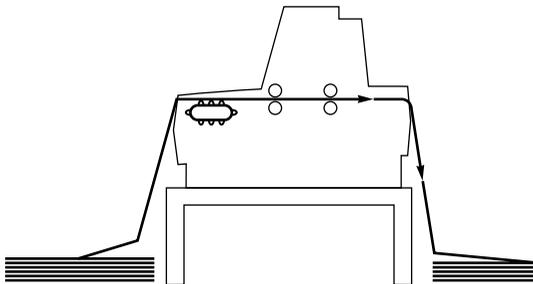
This section tells you how to load fanfold paper. Note that you can also use cut-sheet paper and multi-part form paper. For details on using other types of paper, see “Paper Handling” on page 57 of this manual.

- Position the stack of paper in front of or behind the printer.
See page 68 for details on setting up the printer for feeding either from the back or the front of the printer.
- The following figures show the correct paths for fanfold paper.

Rear feed



Front feed

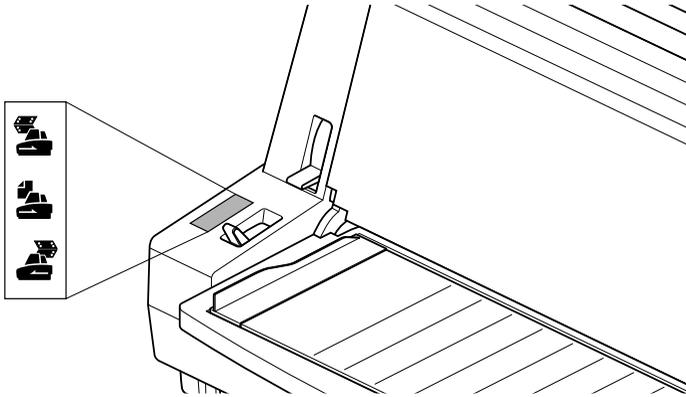


Important!

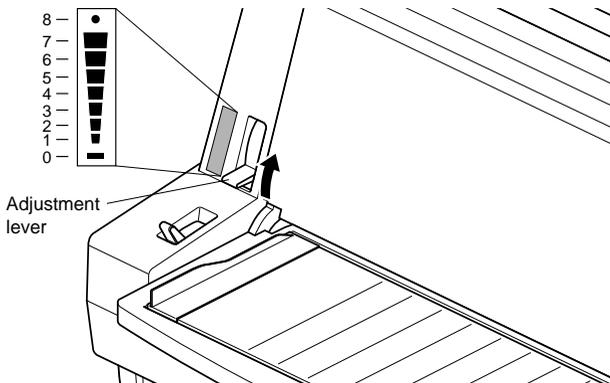
To protect against paper jams, make sure that the fanfold paper is stacked in a position that is lower than the printer.

To decrease paper jams, be sure that the perforations cannot catch on anything in the paper path.

- Unplug the printer from its AC power supply.
- Pull the release lever on the Front of the printer to the fanfold position.



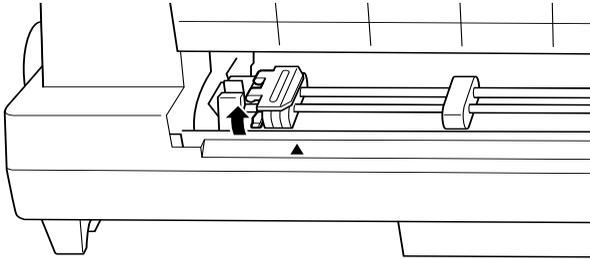
- Set the adjustment lever to the value that matches the thickness of the paper you are using. The setting for normal paper is 1. Set the lever to a larger value for thicker paper, or to a smaller value for thinner paper. See the table on page 59 for details.



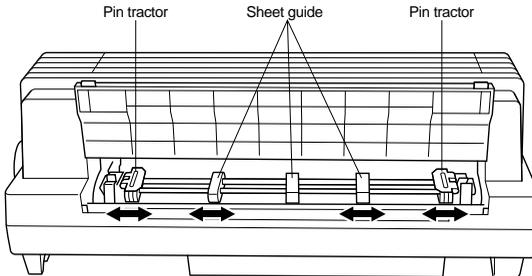
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- ❑ Unlock the tractor on the left (when viewing the printer from behind) by pulling its blue lever up, and adjust the position of the left tractor.

Note that there is a guide inside the printer in front of the left tractor. The ▲ mark of the guide indicates where the left margin of the printing will be.

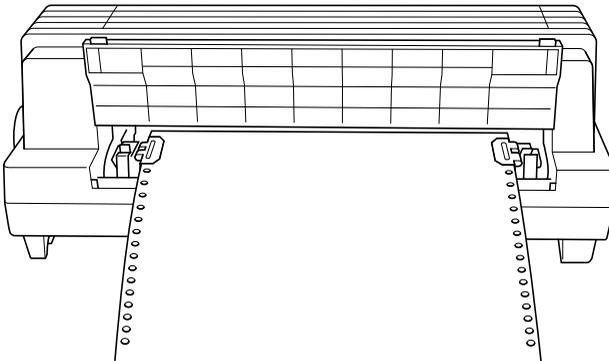
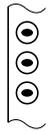
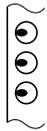
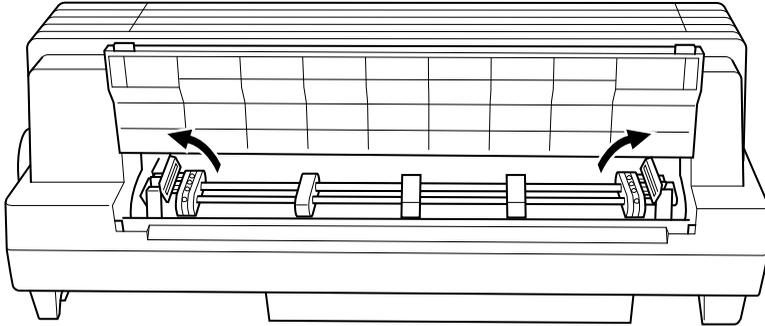


- ❑ Once the left tractor is aligned the way you want it, push the blue lever back down to lock it in place.
- ❑ Now move the tractor on the right to the approximate position of the right side of the paper you are using. Pull its blue lever up to unlock it, and push the lever back down to lock it into place. Also move the center paper support so that it is approximately halfway between the two tractors.



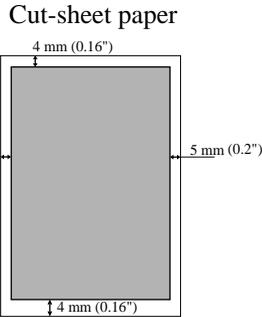
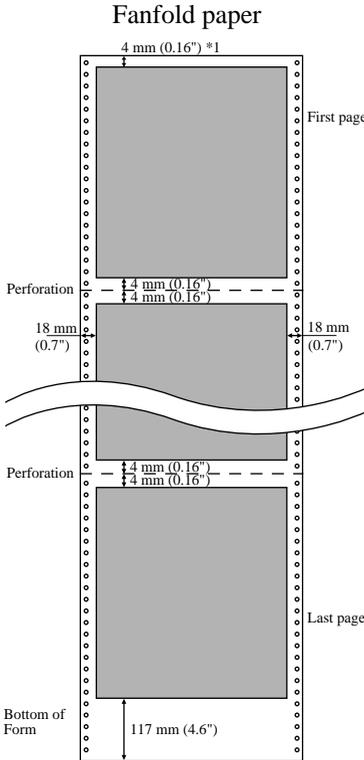
- ❑ Open the covers of both tractors and align the paper so that the pins on the tractors are inserted into the holes of the paper.
- ❑ Close the tractor covers. At this point you can make final adjustments to the paper position by releasing the blue levers and moving the tractors. The paper should lie flat with no buckling or bulging (tractors too close) or no stretching or elongation of the holes (tractors too far apart). After making these adjustments, be sure that you re-lock the tractors by pushing the blue levers back into their original positions.

- ❑ Plug the printer back into its AC power source. The printer will beep a number of times to indicate that paper is not loaded.
- ❑ Press the control panel's **PAPER FEED** button and the paper will feed to the starting position.

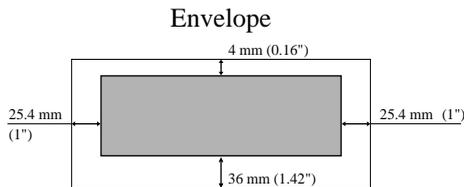
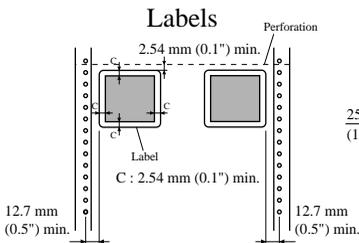


Printing on fanfold paper

When printing on fanfold paper, take care not to print too close to the perforations that separate each sheet. The following shows the recommended print area for fanfold paper, cut-sheet paper, Labels and Envelope.



*1 : When stapled multi-part paper with a width of less than 4.5 inches is used, the print area is 37 mm from the edge of the paper.



Parking fanfold paper

It is not necessary to remove fanfold paper currently loaded in the printer in order to print on cut-sheet paper fed by hand. Instead, simply use the following procedure to *park* the fanfold paper.

- Tear off the paper at a perforation so there is no more than half a page sticking out of the front cover of the printer.
If necessary, you can press the control panel's **ON LINE** button to put the printer off-line. Then use the **PAPER FEED** button to feed the paper until a perforation is just past the front cover.
- Press the control panel's **ON LINE** button to put the printer on-line.
- Press the control panel's **PARK/SET/EJECT** button. The printer automatically reverse feeds the fanfold paper until it is no longer in contact with the platen, which is indicated by the printer beeping a number of times. Also, the control panel's **POWER** indicator starts to flash because paper is not loaded.
- Set the release lever on the front of the printer to the cut-sheet position.
The paper is now parked, and you can load cut-sheet paper into the printer using the procedures under "Manual sheet feeding" on page 60.

Unparking fanfold paper

After you are finished printing on cut-sheet paper, use the following procedure to unpark fanfold paper and make it available for printing.

- If any cut-sheet paper is still in the printer, put the printer on-line and then press the control panel's **PAPER FEED** button to eject it.
- Check to make sure the printer is off-line.
- Set the release lever on the front of the printer to the fanfold position.
- Press the control panel's **PARK/SET/EJECT** button. The printer automatically feeds the fanfold paper back into position, ready for printing.

Using the tear-off function

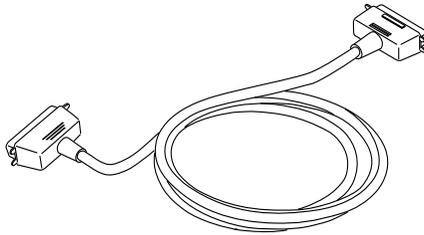
The following procedure makes it easy to tear off fanfold paper without disturbing the current position of the paper.

- Check to make sure that the printer is on-line.
- Press the control panel's **PARK/SET/EJECT** button.
The printer feeds the perforation of the fanfold paper to the tear-off edge of the printer cover.

- Tear off the paper.
- When you resume printing, the printer reverse feeds the paper to its former position.

Connecting to your computer with a parallel cable

The printer is equipped with a parallel interface as standard. It does not come with a cable, so you must separately purchase one that matches the needs of your computer. You will probably want to use a standard parallel cable when connecting to the printer's parallel interface.



The printer is also equipped with a serial interface (page 18).

Note:

In addition to using the parallel interface as-is to connect a parallel interface, you can also connect an optional serial-to-parallel converter (page 63) to convert the parallel interface to a serial interface. This effectively provides two serial interfaces for connection of separate computers.

Important!

The following instructions apply to the Centronics parallel cable that is suitable for use with an IBM-compatible personal computer. Note that they do not apply to all types of computers and cables. If you are unsure about what type of cable you should use, consult your dealer.

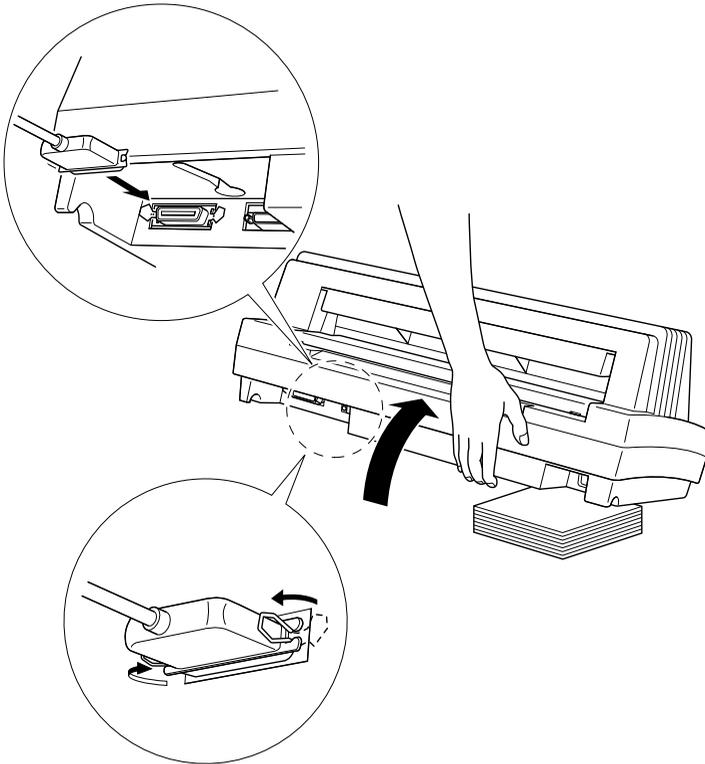
For an IBM-compatible personal computer:

- ✓ Use a standard 36-pin Centronics parallel cable.
- ✓ The parallel cable should be no longer than six feet (two meters). Longer cables can result in poor transfer of information.

Important!

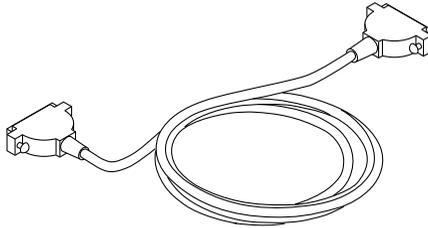
Make sure that the printer is unplugged from the AC outlet and that the computer is turned off before connecting them.

- ❑ Plug one end of the parallel cable into the parallel port of your computer. The parallel port should be labeled “Printer,” “Parallel,” “PRN,” “LPT1,” or something similar.
- ❑ Lift up the back of the printer and insert two books or other similar objects underneath it to keep the printer raised.
- ❑ Plug the other end of the parallel cable into the socket on the back of the printer and secure it in place with the clips.



Connecting to your computer with a serial cable

The printer is equipped with a serial interface as standard. It does not come with a cable, so you must separately purchase one that matches the needs of your computer. You will probably want to use a standard serial (RS-232C) cable when connecting to the printer's serial interface.

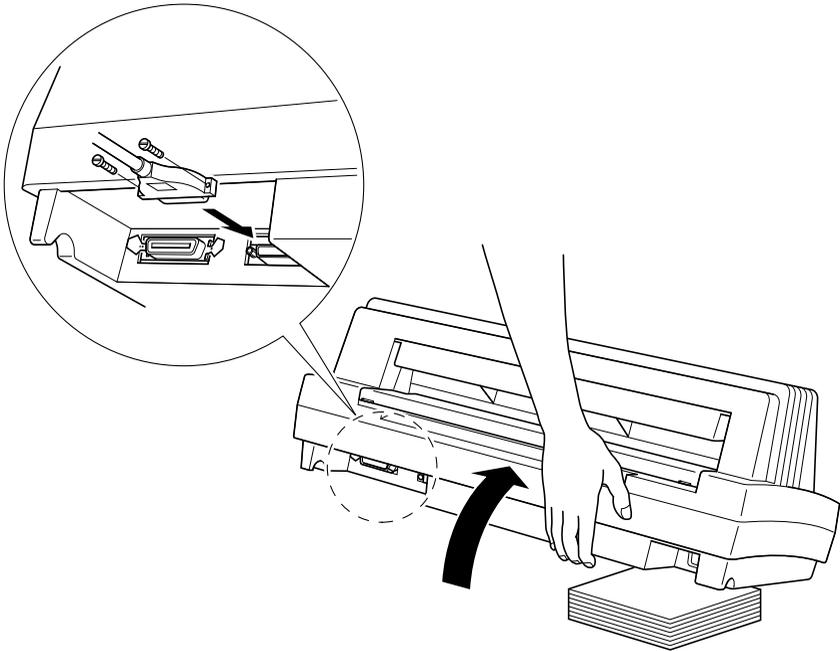


The printer is also equipped with a parallel interface (page 16).

Important!

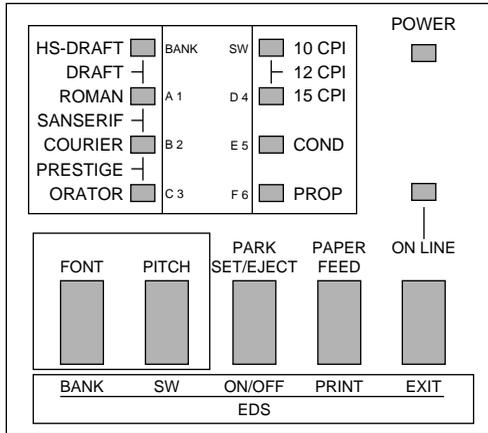
- *The following instructions apply to the serial cable that is suitable for use with an IBM-compatible personal computer. Note that they do not apply to all types of computers and cables. If you are unsure about what type of cable you should use, consult your dealer.*
 - *Make sure that the printer is unplugged from the AC outlet and that the computer is turned off before connecting them.*
-

- ❑ Plug one end of the serial cable into the serial port of your computer. The parallel port should be labeled “COM1,” “COM2,” or something similar.
- ❑ Lift up the back of the printer and insert two books or other similar objects underneath it to keep the printer raised.
- ❑ Plug the other end of the serial cable into the socket on the back of the printer and secure it in place with the screws.



Chapter 2: *Control Panel Operations*

The control panel gives you push-button control over the printer's operations. It includes indicator lights, which tell you the current status of the printer at a glance.



This chapter describes control panel functions that can be performed while the printer is turned on and either on-line or off-line. The buttons perform different functions in the EDS and Dot Adjustment Modes. Functions of control panel buttons in these modes are described in the relevant sections covering them.

Switching between on-line and off-line

- Press **ON LINE** to switch the printer between being on-line and off-line.
- When the printer is on-line, the **ON LINE** indicator is lit and the printer can receive data from the computer. You should make sure that the printer is on-line whenever you are trying to print.
- When the printer is in off-line, the **ON LINE** indicator goes out, which means that the printer cannot receive any data.
- Note that you can also press **ON LINE** while a printing operation is in progress to stop the printing.

Important!

Make sure that the on-line/off-line setting of the printer is correct before performing a control panel operation.

Selecting a font

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- Press **FONT** to change the font selection. An indicator lights to the left of the name of the font that is currently selected.

Lit Indicator	Font
HS-DRAFT	HS-Draft
HS-DRAFT + ROMAN	Draft
ROMAN	Roman
ROMAN + COURIER	Sanserif
COURIER	Courier
COURIER + ORATOR	Prestige
ORATOR	Orator

Note:

The font setting you make with the above procedure can be changed if the software you are using overrides the setting on the control panel. You can prevent this in some applications by using the following procedure to put the printer into the Font Lock Mode when you turn it on.

Entering the Font Lock Mode

When the printer is in the Font Lock Mode, the font settings you make on the control panel are used even if your software tries to override the font. Use the following procedure to enter the Font Lock Mode.

- Turn off the printer.
- While holding down **FONT**, turn printer power on.

The printer is now in the Font Lock Mode. You could enter the Font Lock Mode and Pitch Lock Mode (page 22) at the same time by holding down both **FONT** and **PITCH** when you turn on printer power.

To exit the Font Lock Mode, simply turn the printer off.

Important!

Font lock will not function if you are using Windows TrueType fonts.

Setting the character pitch

The character pitch setting controls how many characters are printed per inch. Use the following procedure to select the pitch you want.

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- Press **PITCH** to change the pitch selection.

The following shows the meanings of the indicators that light on the control panel when you press **PITCH**.

Lit Indicators	Meaning
10CPI	10 characters per inch (Pica)
10CPI + 15CPI	12 characters per inch (Elite)
15CPI	15 characters per inch
10CPI + COND	17 characters per inch (Condensed Pica)
10CPI + 15CPI + COND	20 characters per inch (Condensed Elite)
PROP	Proportional
COND + PROP	Condensed proportional

Note:

The pitch setting you make with the above procedure can be changed if the software you are using overrides the setting from the control panel. You can prevent this by using the following procedure to put the printer into the Pitch Lock Mode when you turn it on.

Entering the Pitch Lock Mode

When the printer is in the Pitch Lock Mode, the pitch settings you make on the control panel are used even if your software tries to override the pitch. Use the following procedure to enter the Pitch Lock Mode.

- Turn off the printer.
- While holding down **PITCH**, turn printer power on.

The printer is now in the Pitch Lock Mode. You could enter the Pitch Lock Mode and Font Lock Mode (page 21) at the same time by holding down both **FONT** and **PITCH** when you turn on printer power.

To exit the Pitch Lock Mode, simply turn the printer off.

Important!

Pitch lock will not function if you are using Windows Truetype fonts.

Line feed

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- Press **PAPER FEED** once to feed paper one line. Holding down **PAPER FEED** continually feeds paper, one line at a time, until you release the button.

Paper eject (cut-sheet paper)

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- Press **PARK/SET/EJECT** to eject the paper.
- After the paper is ejected, the printer will beep and the **POWER** indicator will flash to indicate there is no paper in the printer.

Form feed (fanfold paper)

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- While holding down **PAPER FEED**, press **ON LINE** to feed the paper to the top of the next page.

Parking fanfold paper

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- Press the control panel's **PARK/SET/EJECT** button.
- The printer automatically reverse feeds the fanfold paper until it is no longer in contact with the platen.

Micro feed

Use the following operation to feed the paper in very small increments. This makes it possible to align the print head exactly where you want it.

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- While holding down **ON LINE**, press **PAPER FEED** to feed the paper forward or **PARK/SET/EJECT** to feed the paper backward.

Setting the top of form position

The current position of paper loaded in the printer is automatically set as the top of the page whenever you turn power on. You can also use the following procedure at any time to specify a different position as the top of the page.

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- Use the micro feed operations (see above) to move the paper so that the print head is located where you want the new top of form position to be.
- While holding down **FONT**, press **PARK/SET/EJECT**.

The printer will beep once to indicate that a new top of form position has been set.

Tear-off function (fanfold paper)

This procedure feeds fanfold paper to a position where it can be torn off easily.

- Make sure the printer is on-line (**ON LINE** indicator is lit).
- Press the control panel's **PARK/SET/EJECT** button.
- Tear off the paper.
- When you resume printing, the printer reverse feeds the paper to its former position.

This operation causes the paper to be fed automatically so the tear assist edge of the printer cover is aligned with the paper's next perforation.

Selecting the Quiet Print Mode

The Quiet Print Mode lets you print with less noise than that produced with normal printing. Use the following procedure to enter and exit the Quiet Print Mode.

Important!

Though the Quiet Print Mode prints more quietly, it also causes printing to take considerably longer than normal printing.

- Make sure the printer is on-line (**ON LINE** indicator is lit).
- Press **FONT**, to toggle between the Quiet Print Mode and normal printing. The printer emits one short beeps when the Quiet Print Mode is selected, and two short beep when normal printing is selected.

Changing the auto load position

Normally the printer automatically feeds paper to a standard position (1/6-inch from the top of the paper). This is called the auto load position. You can use the following procedure to specify a different auto load position.

- Make sure the printer is off-line (**ON LINE** indicator is not lit).
- While holding down **ON LINE**, press **PITCH** and then release the two buttons.

The printer will automatically eject the cut-sheet that is in the printer, or reverse feed fanfold paper until it is no longer in contact with the platen. Also, all the font and pitch indicators on the control panel will light.

- Press **PITCH** to feed the paper to the starting position.
- Feed the paper so the print head is located where you want the new auto load position to be.
Press **PAPER FEED** to feed the paper forward and **PARK/SET/EJECT** to feed the paper backward. This is the micro feed operation.
- After you have the paper at the position you want, hold down **ON LINE** and press **PAPER FEED** to make the current print head position the new auto load position. The printer will beep twice to indicate that the new auto load position is set.
- To clear the new auto load position and return to the one that you set previously (using the above procedure), press **ON LINE**. To clear the currently set auto load position and return to the standard position (1/6-inch from the top of the paper), hold down **ON LINE** and press **PITCH**.

Note:

*The auto load position you set remains in effect until you turn the printer off. If you want to save the auto load position in memory, press **PARK/SET/EJECT** instead of **PAPER FEED** while holding down **ON LINE** in the above step.*

Saving a macro

Normally, any settings you make on the control panel are cleared when you turn the printer off. Use the following procedure to save the current control panel settings so that they are used whenever you turn the printer on.

- Make the control panel settings you want.
- Use **ON LINE** to put the printer off-line (**ON LINE** indicator is not lit).
- Hold down **FONT** and then **PITCH**. Keep both buttons held down until the printer beeps twice.

Pressing **FONT** normally changes the font setting, so when you press it in the above step the indicator for the next font lights. Pressing **PITCH**, however, returns the font setting to what it was before you pressed **FONT**. This procedure saves the following settings.

- Current font and pitch settings
- Quiet Print Mode status

These items can be set separately for the Standard mode and the IBM mode.

- To clear saved control panel settings repeat the above procedure, but keep **FONT** and **PITCH** depressed after the printer beeps twice. Soon the printer will beep again three times to indicate that the saved control panel settings have been cleared.

Clearing the printer's buffer

When the printer receives data from a computer, it temporarily stores it in a memory called a buffer. If you stop a print job partway through, there is the chance that some data will remain in the buffer. The following procedure clears the printer's buffer by deleting any data that might be there.

- Execute the necessary command in the program you are using to stop the print job.

Important!

Be sure to stop the print job before taking the printer off line. Otherwise, the print job will resume from where you interrupted it when you put the printer back on-line.

- Use **ON LINE** to take the printer off line (**ON LINE** indicator is not lit).
- Hold down **FONT** and then **PAPER FEED**. Keep both buttons held down until the printer beeps once, which indicates that the buffer is cleared.

Initializing the printer

The following procedure initializes the printer to its power-on settings. If you have control panel settings stored in memory, this procedure sets up the printer using them.

- Use **ON LINE** to take the printer off line (**ON LINE** indicator is not lit).
- Hold down **FONT** and then **PAPER FEED**. Keep both buttons held down until the printer beeps once (indicating the printer buffer is cleared) and then beeps again three times, which indicates that the printer is reset.

Entering the Multi-part Mode

When the printer is in the Multi-part Mode, the print head prints with greater impact. It should be noted, however, that printing in the Multi-part Mode also reduces the life of the print head. Because of this, you should use the Multi-part Mode only for printing on four or five-ply paper. Return to the normal mode for printing on one to three-ply paper.

Use the following procedure to enter the Multi-part Mode

- Turn off the printer.
- While holding down the control panel's **PAPER/SET/EJECT** button, turn the printer back on.
- To exit the Multi-part Mode, Simply turn the printer off and back on again.

Chapter 3: Using the EDS Mode

The letters “EDS” stand for “Electronic DIP Switches.” Just like the small DIP switches that are used by many computers, printers, and other devices, the EDS lets you configure the printer so that it matches your system and software needs.

This chapter describes how to enter the printer’s EDS Mode and provides details about available settings and how to change them.

All switch settings, except for EDS 2B-2, are ON when the printer is shipped from the factory.

About EDS Mode settings

The EDS Mode of this printer actually consists of two sub-modes, named EDS-1 and EDS-2. EDS-1 is used for general settings (such as emulation, print pitch, and paper length), while EDS-2 is used to specify communication parameters for the serial interface and a number of paper handling settings.

EDS-1 settings are grouped among six “banks” (representing banks of switches) that are identified by the letters A through F. Each bank contains a number of “switches” numbered 1 through 6 that you can turn on and off to configure the printer.

EDS-2 settings consist of three “banks” named A, B, and C, with each bank containing six switches.

Entering the EDS Mode

- Make sure that paper is loaded in the printer.
- Turn off the printer.
- To enter the EDS-1 Mode, turn the printer on while holding down the control panel’s **PARK/SET/EJECT**, **PAPER FEED**, and **ON LINE** buttons.

To enter the EDS-2 Mode, turn the printer on while holding down the control panel’s **FONT**, **PITCH**, and **PARK/SET/EJECT** buttons.

Either of the above operations causes the following message to be printed, which indicates the printer is in the EDS Mode.

CURRENT EDS SETTINGS

Bank	1-A	1-B	1-C	1-D	1-E	1-F	2-A	2-B	2-C
Switch	123456	123456	123456	123456	123456	123456	123456	123456	123456
ON	*****	*****	*****	*****	*****	*****	*****	*****	*****
OFF								X	XXXX

Note:

The contents of the above message are the same, regardless of whether you enter EDS-1 or EDS-2. The asterisks indicate the current EDS Mode switch settings for all the banks in both sub-modes.

Selecting a bank

- While in the EDS Modes (EDS-1 or EDS-2), use the control panel's **BANK** button to select a bank. While the **BANK** indicator is flashing, the lit indicator indicates the currently selected bank.

Lit Indicator	Selected Bank
A1	A
B2	B
C3	C
D4	D
E5	E
F6	F

Note:

EDS-2 has only three banks, so pressing the BANK button cycles through banks A, B, and C only. Indicators D4, E5, and F6 do not light with EDS-2.

Selecting a switch

- While in the EDS Modes (EDS-1 or EDS-2), use the control panel's **SWITCH** button to select a bank switch. While the **SW** indicator is flashing, the lit indicator indicates the currently selected switch.

Lit Indicator	Selected Switch
A1	1
B2	2
C3	3
D4	4
E5	5
F6	6

Changing a switch setting

- After selecting a bank and switch, press the control panel's **ON/OFF** button to turn the switch on and off. The current setting of the switch is shown by the **ON LINE** indicator: the indicator is lit when the switch is on, and is not lit when the switch is off.

Printing the current switch settings

- In the EDS Modes, press and hold the control panel's **PRINT** button to print out the current switch settings. Asterisks on the printout show whether a switch is turned on or off.

Exiting the EDS Modes

- Press the control panel's **EXIT** button to exit the EDS Modes.

EDS Modes Settings

The following details all of the settings you can program in the EDS Mode.

EDS-1 Settings

The following details all of the settings you can make for EDS-1.

BANK A

Switch 1: Emulation

Selects Standard emulation (ON) or IBM emulation (OFF). Standard emulation causes the printer to act like the Epson ESC/P (24-pin), while IBM emulation makes it act like the IBM Proprinter XL24E.

Switch 2: Character Table

The function of this switch depends on whether you are using IBM or Standard emulation.

Emulation	Switch 2 Setting	Description
Standard	ON	Graphics: IBM Character Set #2
	OFF	Italics: Italic character table used
IBM	ON	IBM Character Set #2
	OFF	IBM Character Set #1

Switch 3: RAM Usage

Specifies whether RAM should be used as an input buffer (ON) or as a download buffer (OFF). Selecting input buffer (ON) tells the printer to use available RAM to store data it receives from the computer, which speeds up the printing. Selecting download buffer (OFF) tells the printer to use available RAM to store character patterns.

Switch 4: Paper Out Detector

Specifies whether the printer's paper out detector is enabled (ON) or disabled (OFF). When the paper out detector is enabled (ON), the printer automatically stops printing whenever it senses there is no more paper. When it is disabled (OFF), the printer continues printing as long as there is data. Selecting disabled (OFF) makes it possible to print right up to the bottom of a page, but it also creates the danger of printing when there is no paper loaded in the printer, which can damage the print head and platen.

Switch 5, 6: Multi-Part mode

When the printer is in the Multi-part Mode, the print head prints with greater impact. It should be noted, however, that printing in the Multi-part Mode also reduces the life of the print head.

When Auto (SW5: ON and SW6: ON) is selected, the printer mode automatically switches between Multi-part Mode and Normal Mode. For example, if the adjustment lever is set to 3 or less, Normal Mode is selected; if the lever is set to 4 or more, Multi-part Mode is selected.

Mode	SW5	SW6
Auto selectable	ON	ON
Multi-part mode	OFF	ON
Normal mode	ON	OFF

BANK B

Switch 1: Graphics Direction

Selects uni-directional (OFF) or bi-directional (ON) printing for graphics. Bi-directional printing (ON) is faster, while uni-directional (OFF) printing generally provides better print quality in the graphics mode.

Switch 2: Auto Tear-off

Specifies whether the printer's auto tear-off feature (page 24) is enabled (OFF) or disabled (ON). Note that this setting controls the application software's tear-off function only. It does not affect the manual tear-off function that is performed using the control panel buttons as described on page 24. The manual tear-off function is always enabled.

Switch 3: Line Spacing

Selects 1/6-inch (ON) or 1/8-inch (OFF) spacing between lines.

Switch 4: Auto LF with CR

Specifies whether auto LF with CR is enabled (OFF) or disabled (ON). When auto LF with CR is enabled (OFF), the printer automatically performs a line feed whenever it receives a carriage return from the computer. When it is disabled (ON), the computer must send both a line feed code and a carriage return code at the end of each line. Most applications do this automatically. Note the following checkpoints when trying to figure out which setting to use here:

- ✓ If you find that your output is double-spaced when it should not be, turn this switch ON (Disabled).
- ✓ If you find that lines are printing over each other, turn this switch OFF (Enabled).

Switch 5: Zero Style

Specifies whether a normal zero (ON) or a slashed zero (OFF) will be used. Selecting Normal (ON) prints zeros without lines running through them, while Slashed (OFF) prints zeros with a diagonal slash running through them.

Switch 6: Reserved

BANK C**Switches 1, 2: Print Mode**

Turn these switches on or off to select the print mode you want to use.

Print Mode	SW1	SW2
LQ	ON	ON
Draft	OFF	ON
HS-Draft	ON	OFF

Switches 3, 4, 5: Print Pitch

Turn these switches on or off to form the pattern that matches the print pitch setting you want to make.

Print Pitch	SW3	SW4	SW5
10dpi	ON	ON	ON
12dpi	OFF	ON	ON
15dpi	ON	OFF	ON
17dpi	OFF	OFF	ON
20dpi	ON	ON	OFF
Proportional	OFF	ON	OFF

Switch 6: Quiet

When the Quiet Mode is enabled (OFF), the printer prints with less noise than normal printing. Though the Quiet Mode prints more quietly, it also takes considerably longer than normal printing.

BANK D**Switches 1, 2, 3, 4: Page Length**

Turn these switches on or off to form the pattern that matches the Page Length setting you want to make.

Page Length	SW1	SW2	SW3	SW4
11"/Letter	ON	ON	ON	ON
8"	OFF	ON	ON	ON
11.7"/A4	ON	OFF	ON	ON
12"	OFF	OFF	ON	ON
8.5"/Letter	ON	ON	OFF	ON
14"/Legal	OFF	ON	OFF	ON
10.5"/Executive	ON	OFF	OFF	ON
7.25"/Executive	OFF	OFF	OFF	ON
3.5"	ON	ON	ON	OFF
5.5"	OFF	ON	ON	OFF

Switch 5: Eject direction for cut sheet

ON	Eject cut-sheet paper towards front
OFF	Eject cut-sheet paper towards back

Switch 6: Skew sensor for cut sheet

ON	Disable skew sensor for cut-sheet paper
OFF	Enable skew sensor for cut-sheet paper

BANK E**Switches 1, 2, 3, 4, 5, 6: Code Page/International Character Set**

If your EDS settings specify IBM emulation (Bank A, Switch 1 OFF) with either character table (Bank A, Switch 2), or Standard emulation (Bank A, Switch 1 ON) with the graphics character table (Bank A, Switch 2 ON), use the Bank E switches to select the default character code page you want to use.

Code Page	SW1	SW2	SW3	SW4	SW5	SW6
#437 IBM-PC	ON	ON	ON	ON	ON	ON
#850 Multi-lingual	OFF	ON	ON	ON	ON	ON
#860 Portuguese	ON	OFF	ON	ON	ON	ON
#861 Icelandic	OFF	OFF	ON	ON	ON	ON
#863 Canadian French	ON	ON	OFF	ON	ON	ON
#865 Nordic	OFF	ON	OFF	ON	ON	ON
#866 Russian	ON	OFF	OFF	ON	ON	ON
#3840 IBM-Russian	OFF	OFF	OFF	ON	ON	ON
#3841 Gost-Russian	ON	ON	ON	OFF	ON	ON
#3843 Polish	OFF	ON	ON	OFF	ON	ON
#3844 CS2	ON	OFF	ON	OFF	ON	ON
#3845 Hungarian	OFF	OFF	ON	OFF	ON	ON
#3846 Turkish	ON	ON	OFF	OFF	ON	ON
#3847 Brazil-ABNT	OFF	ON	OFF	OFF	ON	ON
#3848 Brazil-ABICOMP	ON	OFF	OFF	OFF	ON	ON
#852 Latin-2	OFF	OFF	OFF	OFF	ON	ON
#1001 Arabic	ON	ON	ON	ON	OFF	ON
#737 Greek	OFF	ON	ON	ON	OFF	ON
#851 Greek	ON	OFF	ON	ON	OFF	ON
#869 Greek	OFF	OFF	ON	ON	OFF	ON
#928 Greek	ON	ON	OFF	ON	OFF	ON
#2001 Lithuanian-KBL	OFF	ON	OFF	ON	OFF	ON
#772 Lithuanian	ON	OFF	OFF	ON	OFF	ON
#774 Lithuanian	OFF	OFF	OFF	ON	OFF	ON
#3001 Estonian-1	ON	ON	ON	OFF	OFF	ON
#3002 Estonian-2	OFF	ON	ON	OFF	OFF	ON
#3011 Latvian-1	ON	OFF	ON	OFF	OFF	ON
#3012 Latvian-2	OFF	OFF	ON	OFF	OFF	ON
#3021 Bulgarian	ON	ON	OFF	OFF	OFF	ON
#3031 Hebrew	OFF	ON	OFF	OFF	OFF	ON
#3041 Maltese	ON	OFF	OFF	OFF	OFF	ON
#3850 Standard KU	OFF	OFF	OFF	OFF	OFF	ON

Code Page	SW1	SW2	SW3	SW4	SW5	SW6
#3860 Rajvitee KU	ON	ON	ON	ON	ON	OFF
#3861 Microwiz KU	OFF	ON	ON	ON	ON	OFF
#3863 STD 988 TIS	ON	OFF	ON	ON	ON	OFF
#3864 Popular TIS	OFF	OFF	ON	ON	ON	OFF
#3865 Newsic TIS	ON	ON	OFF	ON	ON	OFF

A code page is the set of symbols and characters that your printer can print. Your printer converts ASCII hexadecimal data according to a code page to print symbols and characters. By supporting different code pages, the printer can print in a variety of different languages. The following table shows detailed information about code pages.

Code Page	Name	Country	Remarks
#437	IBM PC	United Kingdom, France, Germany, Italy, Austria, Switzerland, United States, Spain	
#850	Multi-Lingual	United Kingdom, France, Germany, Italy, Austria, Switzerland, United States, Spain	Preferred by Microsoft
#860	Portuguese	Portugal	
#861	Icelandic	Iceland	
#863	Canadian French	Canada	
#865	Nordic	Denmark, Finland, Norway, Sweden	Preferred by Microsoft
#866	Russian	Russia	Preferred by Microsoft
#3840	IBM-Russian	Russia, Bulgaria	
#3841	Gost-Russian	Russia	Gost: government standard
#3843	Polish	Poland	Also called "Mazowia"
#3844	CS2	Czech Republic	Also called "Kamenicky"
#3845	Hungarian	Hungary	
#3846	Turkish	Turkey	
#3847	Brazil-ABNT		
#3848	Brazil-ABICOMP		

Code Page	Name	Country	Remarks
#852	Latin-2	Croatia, Czech Republic, Hungary, Poland, Romania, Serbia, Slovak Republic, Slovenia	Preferred by Microsoft
#1001	Arabic	Egypt, Saudi Arabia	Mainly in Arabic speaking countries
#737	Greek	Greece	Almost 80%
#851	Greek	Greece	
#869	Greek	Greece	
#928	Greek	Greece	For UNIX
#2001	Lithuanian-KBL	Lithuania	Commonly used for DOS
#772	Lithuanian	Lithuania	New standard
#774	Lithuanian	Lithuania	
#3001	Estonian-1	Estonia	
#3002	Estonian-2	Estonia	Most often used
#3011	Latvian-1	Latvia	
#3012	Latvian-2	Latvia	Government standard
#3021	Bulgarian	Bulgaria	
#3031	Hebrew	Israel	
#3041	Maltese	Malta	
#3850	Standard KU	Thailand	
#3860	Rajvitee KU	Thailand	
#3861	Microwiz KU	Thailand	
#3863	STD988 TIS	Thailand	
#3864	Popular TIS	Thailand	
#3865	Newsic TIS	Thailand	

If your EDS settings specify Standard emulation (Bank A, Switch 1 ON) with the italic character table (Bank A, Switch 2 OFF), use the Bank E switches to select the international character set you want to use. This setting determines the assignment of 14 character codes in the Standard Italic character set.

International Character Set	SW1	SW2	SW3	SW4	SW5	SW6
U.S.A.	ON	ON	ON	ON	ON	ON
France	OFF	ON	ON	ON	ON	ON
Germany	ON	OFF	ON	ON	ON	ON
England	OFF	OFF	ON	ON	ON	ON
Denmark-1	ON	ON	OFF	ON	ON	ON
Sweden	OFF	ON	OFF	ON	ON	ON
Italy	ON	OFF	OFF	ON	ON	ON
Spain-1	OFF	OFF	OFF	ON	ON	ON
Japan	ON	ON	ON	OFF	ON	ON
Norway	OFF	ON	ON	OFF	ON	ON
Denmark-2	ON	OFF	ON	OFF	ON	ON
Spain-2	OFF	OFF	ON	OFF	ON	ON
Latin America	ON	ON	OFF	OFF	ON	ON
Korea	OFF	ON	OFF	OFF	ON	ON
Ireland	ON	OFF	OFF	OFF	ON	ON
Legal	OFF	OFF	OFF	OFF	ON	ON

BANK F**Switches 1, 2, 3, 4, 5, 6: LQ Font Selection**

Turn these switches on or off to form the pattern that identifies the font you want to use for LQ printing.

Font	SW1	SW2	SW3	SW4	SW5	SW6
Roman	ON	ON	ON	ON	ON	ON
Sanserif	OFF	ON	ON	ON	ON	ON
Courier	ON	OFF	ON	ON	ON	ON
Prestige	OFF	OFF	ON	ON	ON	ON
OCR B	OFF	ON	OFF	ON	ON	ON
Orator	OFF	OFF	OFF	ON	ON	ON

Note:

Bank C Switches 1 and 2 must be in the correct position before this setting has any effect.

EDS-2 Settings

The following details all of the settings you can make for EDS-2. For communications protocol settings (Banks A and B), the matching settings you have to make in your MS-DOS AUTOEXEC.BAT file or with the **Ports** option of the Windows **Control Panel** are also provided.

BANK A**Switch 1: Data Length**

Specifies the number of bits that the computer transmits as one byte. This setting is normally 8.

Data Length	SW1	DOS/Windows Setting
8 bits	ON	8
7 bits	OFF	7

Switch 2: Parity Check

This switch specifies whether or not a parity check should be performed on the data.

Parity Check	SW2	DOS/Windows Setting
Disabled	ON	Disabled
Enabled	OFF	Enabled

Switch 3: Parity

This switch specifies the parity as non, odd, or even.

Parity	SW3	DOS/Windows Setting
Odd	ON	O
Even	OFF	E

Switch 4: Protocol

Protocol, which is sometimes referred to as “handshaking,” is the communications convention that is used to allow the printer and computer to regulate the flow of data. DTR is the most commonly used protocol.

Protocol	SW4	DOS/Windows Setting
DTR	ON	DTR
XON/XOFF	OFF	XON/XOFF

Switch 5, 6: Not used

BANK B**Switch 1, 2, 3: Baud Rate**

The baud rate is the speed, in bits per second, that the printer sends data to the computer. The common setting is 9600 or 19200.

Baud Rate	SW1	SW2	SW3	DOS/Windows Setting
300	OFF	OFF	OFF	300
600	ON	OFF	OFF	600
1200	OFF	ON	OFF	1200
2400	ON	ON	OFF	2400
4800	OFF	OFF	ON	4800
9600	ON	OFF	ON	9600
19200	OFF	ON	ON	19200

Switch 4: Not used**Switch 5, 6: Waiting period for paper loading**

Waiting period	SW1	SW2
2.0 seconds	ON	ON
1.5 seconds	OFF	ON
1.0 seconds	ON	OFF
0.5 seconds	OFF	OFF

BANK C**Switch 1, 2, 3, 4, 5, 6: Paper Control**

Bank C lets you specify the top and bottom margins for printing.

Switch	Setting	Meaning
SW1	ON	1/8" top margin for cut-sheet paper
	OFF	0" top margin for cut-sheet paper
SW2	ON	1/8" top margin for fanfold paper (Rear)
	OFF	0" top margin for fanfold paper (Rear)
SW3	ON	1/8" top margin for fanfold paper (Front)
	OFF	0" top margin for fanfold paper (Front)
SW4	ON	1/8" bottom margin for cut-sheet paper
	OFF	0" bottom margin for cut-sheet paper
SW5	ON	1/8" bottom margin for fanfold paper (Rear)
	OFF	0" bottom margin for fanfold paper (Rear)
SW6	ON	1/8" bottom margin for fanfold paper (Front)
	OFF	0" bottom margin for fanfold paper (Front)

Chapter 4: Using the Printer with Windows 3.1

This chapter contains specific information you need to know when using the printer with Microsoft Windows 3.1 or later. It also tells you how to install the printer driver on your computer so that it can control the printer correctly. In this chapter, you will learn about:

- How to set up for printing with Microsoft Windows 3.1
- How to prepare for printing
- How to print a document
- How to install TrueType fonts
- How to select fonts from within an application

Important!

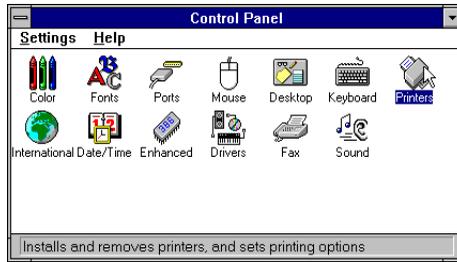
See the “readme.txt” file for important information that became available after this documentation was printed.

Setting up for printing with Microsoft Windows 3.1

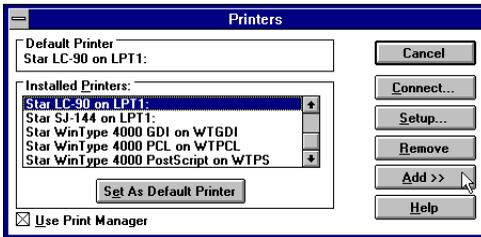
This printer is designed to work best with computers running Microsoft Windows 3.1 or later. If you are running an earlier version of Windows, we recommend that you upgrade to 3.1.

Before you can use the printer with Windows, you must first use the procedure outlined below to install the printer driver that is supplied on the 3.5” floppy disk that comes with the printer. This procedure assumes that you are using a mouse and that you are familiar with common mouse operations like *click* and *double-click*. If you need information on mouse operations or if you want to install the printer driver without using a mouse, refer to your *Microsoft Windows User’s Guide*.

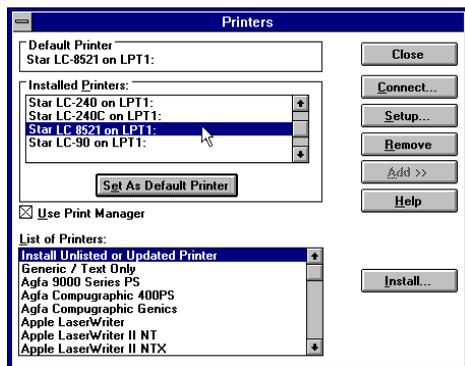
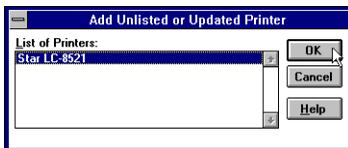
- Insert the disk that contains the printer driver into one of your computer’s disk drives. This explanation assumes you are using a drive named “A:”, but you could use any drive. Just remember to change the “A:” in the following steps to the name of the drive you are using.
- In the Main group, double-click on the Control Panel icon.
- Double-click on the Printers icon in the Control Panel window.



- Click **Add** and the dialog box will expand to show a List of Printers.
- In the List of Printers: box, select Install Unlisted or Updated Printer.
- Click **Install**.
- This causes the Install Driver dialog box to appear, which instructs you to insert the disk that contains the printer driver file.



- Click **Browse**.
- In the Directories: list, select WIN 31.
- Click on the language you want to use and then click **OK**.
We will use English in all of our examples here.



- In the List of Printers: box of the Add Unlisted or Updated Printer dialog box, select your printer driver and then click **OK**.
This causes the Printers dialog box to appear. Your printer is now listed in the Installed Printers: list.
- Double-click on the name of the printer model you just installed to select it as the default printer.
- Click **Close** to close the Printers dialog box.

Note:

Windows applications automatically print on the currently selected default printer. If you want to print on a different printer, you must first select it.

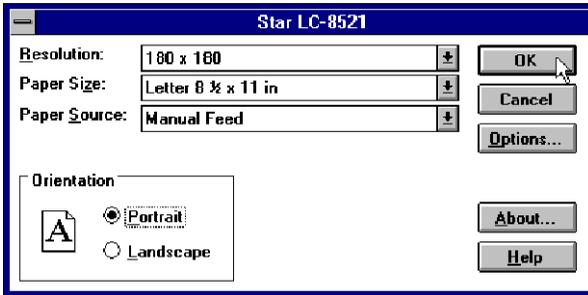
Getting ready to print

Before printing, there are a number of things you must first do to set up the printer. You must select the printer driver, and the paper source, size, and orientation. Use the following procedure to make these selections.

Note:

You do not need to perform printer driver and paper selections mentioned above each time you print, but only if there are any changes to the last selections you made.

- In the Windows Program Manager, open the **Main** group by clicking on its icon.
- Double-click on the Control Panel icon.
- Double-click on the **Printers** icon in the Control Panel window.
- Double-click on the name of the printer model you selected above to choose it as the default printer.
- Click on **Setup** to display the window for setting up your printer.



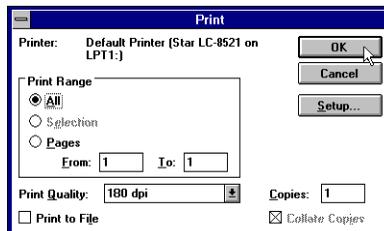
- From this window you select buttons that let you control a wide variety of printer setup parameters. This manual does not include any information about how to do this because everything you need to know is included in an on-line manual that tells you how to use all the buttons and menus that appear. To view the on-line manual, click on the **Help** button.
- After the printer is set up the way you want it, click on **OK**.
- Click on the **Close** button in the Printers window to save your setup and return to the Program Manager.

Note:

Depending on the application software you are using, settings similar to those in the above procedure can be made using the **Print Setup** command of the File menu instead of the Control Panel.

Printing a document

The following Print window appears when you select the **Print** command of the File menu of your Windows application.

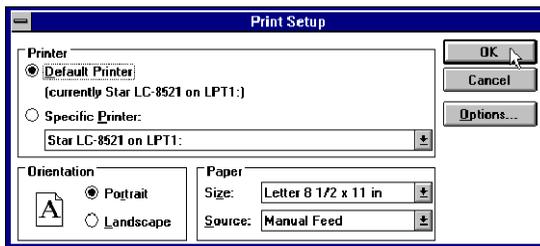


Note:

The actual appearance of the Print window may differ somewhat depending on the application you are using.

Use this window to specify the range of the pages to be printed, the quality of the printing (in dots per inch), and the number of copies you want to print. Note also that there are boxes that you can select to specify printing to a file or collating (printing from back to front).

You can change the printer setup by clicking on the **Setup** button. When you do, the following window for setting up your printer appears on the display.

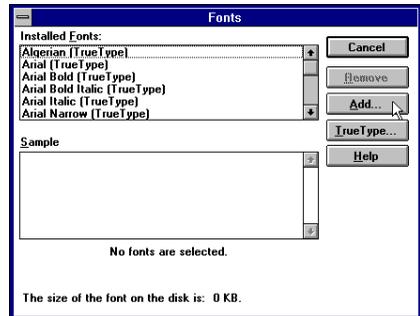
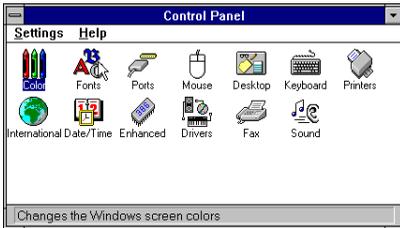


Make changes by clicking on the appropriate radio button or highlighting your selection on the appropriate pull-down menu.

Installing TrueType fonts

The TrueType fonts that are supplied on one of the 3.5" floppy disks that come with the printer can be used only when you are running Windows 3.1 or later. Use the following procedure to install the fonts.

- Launch Windows.
- Close any applications that may be open.
- Open the Windows Control Panel.
- Double-click the **Fonts** icon and the Fonts dialog box appears.
- Click **Add** and the Add Fonts dialog box appears.



- Insert the disk that contains the fonts into one of your computer's disk drives. This explanation assumes you are using a drive named "A:," but you could use any drive. Just remember to change the "A:" in the following steps to the name of the drive you are using.
- Select the letter that represents the drive where the floppy disk is installed. When you do, the names of all the fonts on the disk appear in the List of Fonts window. Select the fonts you want to install by clicking on their names. If you want to install all of the fonts, click **Select All**.
- Click **OK**. The Fonts dialog box appears and installation is performed. The names of the newly installed fonts are automatically added to the Installed Fonts list.
- If you were in an application program when you installed the new fonts, you will need to select **Printer Setup** from the application's **FILE** menu, and reselect the printer. After that, the application can display on-screen text and print text on the printer using the newly installed fonts.

Selecting fonts in Windows applications

Refer to the manual of the application you are using for details on how to select fonts within that application.

In addition to the Windows fonts, you can also use the TrueType fonts that come with this printer.

Chapter 5: Using the printer with Windows 95

This chapter describes how to use the printer with Microsoft Windows 95. The following topics are covered:

- Setting up the printer in Windows 95
- Preparing for printing
- Printing a document
- Installing the TrueType fonts

Note:

The file “readme.txt” on the floppy disk contains any late-breaking information that has been made available since this manual was printed.

Setting up the printer in Windows 95

To use the printer with Windows 95, you need to install a file known as the printer driver onto your computer. This file is supplied on the floppy disk that comes with the printer.

The following description assumes that you are using a mouse (“click” and “double-click” refer to the action of using the mouse to point at an item with the on-screen pointer, and then clicking either once, or twice in quick succession).

To install the printer driver under Windows 95, use the following steps:

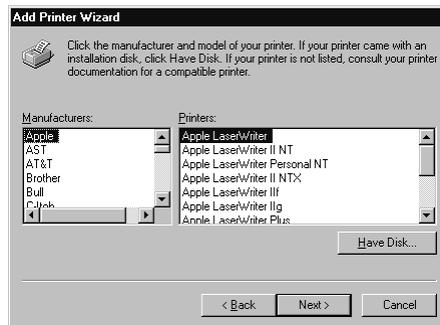
- Turn on the printer and start up your computer.
- Click on the **Start** button in the bottom lefthand corner of the screen.
- Select **Settings**.
- Release the mouse button on **Printers**.
- Double-click on the **Add Printer** icon in the **Printers** window.



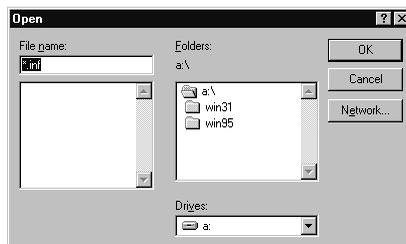
- Click on the **Next** button.



- ❑ When the above window is displayed, make sure the **Local printer** radio button is checked. Then click on the **Next** button.

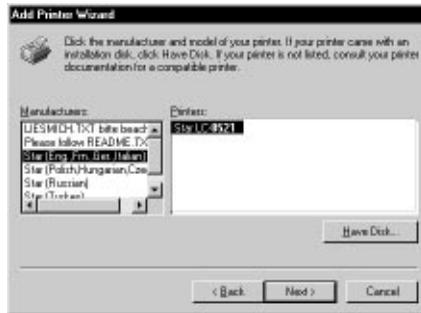


- ❑ Click on the **Next** button and click on the **Back** button. Then click on the **Have Disk** button.
- ❑ Insert the disk with the printer driver file on it into the floppy disk drive. Make sure that the drive's name ("A:" or "B:") is displayed in the field named *Copy manufacturer's files from:*. To select a drive name, click on the arrow by the side of the field and select the drive from the list that appears.
- ❑ Click on the **Browse** button. A list of folders on the floppy disk is displayed.

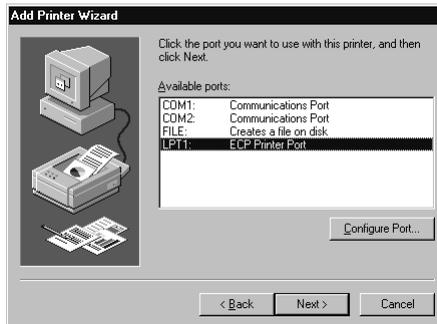


- ❑ Select "WIN95" (either by double-clicking on it or by clicking on it and clicking on the **OK** button).

- ❑ Click on the **OK** button twice.



- ❑ Select the language or language group you want to use by clicking on it.
- ❑ Select the printer model name (“Star LC-8521”) by clicking on it and then click on the **Next** button.



- ❑ Select the printer port to which the printer is connected by clicking on it (usually “LPT1”). Click on the **Next** button.



- ❑ Change the printer name if you want. If you have previously installed another printer, you must select whether you want the new printer to be the default printer. Click on the appropriate radio button.

Note:

Windows applications always print to the currently selected default printer, unless the user chooses a different printer from within the application.

- Click on the **Next** button.
- Select whether to print out a test page by clicking on the appropriate radio button.
- Click on the **Finish** button.
- If a message appears requesting you to insert the Windows 95 CD-ROM, insert it into the CD-ROM drive and click on the **OK** button.
- If a message appears saying that the printer driver file *LC8521.DRV* cannot be found on the Windows 95 CD-ROM, click on the **Browse** button, select the floppy disk drive's name ("A:" or "B:"), click on "WIN95" in the list of directories and click on the **OK** button (or double-click on "WIN95").
- Click on the **OK** button.

This concludes the printer set-up.

Preparing to print

Often you can simply select the **Print** command in the application you are using, click the **OK** button, and your document will be printed out. However, sometimes you may need to change certain settings beforehand, such as the default printer, which port a printer uses, which printer driver it uses, the paper size, the paper source etc.

Settings are made by checking radio buttons, entering numbers into fields or by clicking on the arrow by the side of a field and selecting an option from the list that appears. All these settings, and how to make them, are fully explained in the *Microsoft Windows 95 User's Guide*.

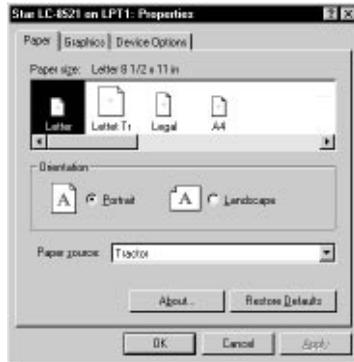
Some settings, e.g. paper size and paper source, can be made within an application when you select the **Print** command (see the next section: *Printing a document*). However, settings made within an application only affect printing from that application.

To change the default printer and to make general settings that will apply to any application, proceed as follows:

- Click on the **Start** button in the bottom lefthand corner of the screen.
- Select **Settings**.
- Release the mouse button on **Printers**.



- Double-click on the icon bearing the name of the printer (*Star LC-8521*) in the **Printers** window. A window appears listing any documents that are currently being printed on the printer.
- Click on the **Printer** menu.
- To set the printer as the default printer, click on the **Set As Default** command so that a tick mark appears in the check box. This denotes that the selected printer is the default printer.
- Click on the **Printer** menu and click on the **Properties** command.



- Click on any of the five index-card type buttons and change the parameter settings as you require. For a detailed explanation of any of the settings, click on the “?” button on the top right of the window and then click on the relevant parameter field. Click once more to clear the help message from the screen.

Note:

Paper, Graphics and Device option settings can also be made when you select the **Print command in an application. However, settings made within an application only apply to printing from that application.**

- Click on the *Close (X)* button on the top right of the **Properties** window.
- Click on the *Close (X)* button on the top right of the printer’s window

This concludes the printing preparation. The printer which you selected is now the default printer, and the page size, paper source setting and any other settings which you made for the printer, apply to printing from all applications. To override these settings for a specific application, refer to the next section, *Printing a document*.

Printing a document

Windows 95 applications always print to the currently selected default printer. If you want to change the default printer, refer to the previous section, *Preparing to print*.

To print from any Windows 95 application, proceed as follows:.

- Click on the application's **File** menu.
- Click on the **Print** command.

Note:

The actual appearance of the Print window may differ somewhat depending on the application you are using.

- If you do not want to use the default printer, select a different printer by clicking on the arrow by the side of the *Name* field and selecting one from the list that appears.
- Click on the **Properties** button.
- If you want to change any of the printer settings, for example paper size, orientation or paper source, click on the appropriate index card-type button (**Paper, Graphics** or **Device options**) and change the parameter settings as you require.
For a detailed explanation of any of the settings, click on the **?** button on the top right of the window and then click on the relevant parameter field. Click once more to clear the help message from the screen.
Changes you make here apply only to printing from the current application
- Click on the *Close* (X) button on the top right of the window.

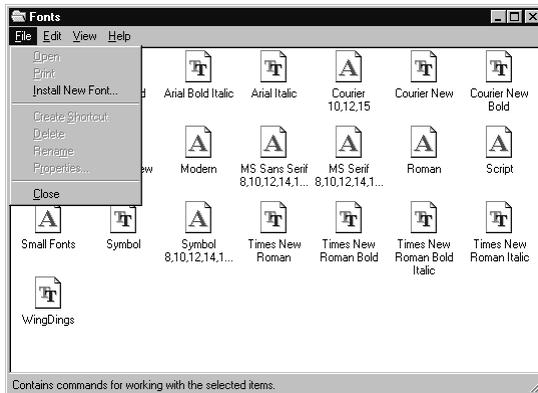


- Select how many copies of the document will be printed by entering the appropriate number into the Number of copies field. If you want to print all the pages in your document, make sure that the All radio button is checked. If you do not want to print all the pages in your document, enter the first and last pages to print into the from and to fields.
 - If you want the output to be collated (each copy automatically sorted into page order) or if you want to print to file (instead of a print-out, a graphic file of the print-out is saved on disk), check the appropriate radio button.
 - Click on the **OK** button.
- Your document will now be printed out.

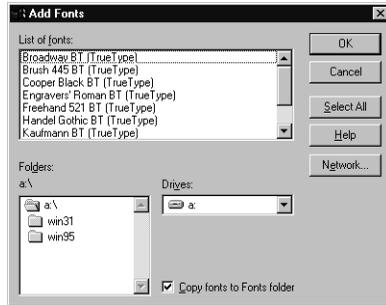
Installing TrueType fonts

To install the TrueType fonts that are on the floppy disk accompanying this printer, follow the procedure below.

- Insert the disk in your computer's floppy disk drive.
- Click on the **Start** button in the bottom lefthand corner of the screen.
- Select **Settings**.
- Release the mouse button on **Control Panel**.
- Double-click on the **Fonts** folder. The currently-installed font files are displayed.
- Click on the **File** menu.



- Click on the **Install New Font...** command.
- Display the drive's name ("A:" or "B:") in the *Drives* field. To select a drive name, click on the arrow by the side of the field and select the drive from the list that appears. The names of the fonts stored on the disk are displayed in the *List of fonts* window.



- Select the fonts you wish to install by clicking on them. If you want to install all of them, click on the **Select All** button.
- Click on the **OK** button.

The new fonts can now be seen in the **Fonts** folder window. This concludes the font installation.

Chapter 6: Using the Printer with MS-DOS

This chapter contains information about how to use the printer with applications software running under MS-DOS. In this chapter, you will learn about:

- How to set up for printing with MS-DOS
- How to select fonts from within an application

Setting up for printing with MS-DOS

To print from an application running under MS-DOS, you must first select the printer from within the application. Typically, the program will feature an **INSTALL** or **SETUP** command for selection of printers. Refer to the manual for the application you are using for details on how to select a printer for it.

- Start up the application and use the correct procedure for that application to select a printer. The following is a list of printers that can be used. If your application lists more than one of these, select the printer that is nearest to the top of this list. For these printers, you should use the EDS Mode to select standard emulation (page 31).

Star LC-8521
Star LC-8211
Star LC24-300 / NX-2480
LC24-30 / NX-2450
Epson LQ-860/1060
Epson LQ-850/1050

If none of the printers listed above are available in the application, choose one of the printers listed below. Once again, you should choose the printer that is nearest to the top in the following list. For these printers, you should use the EDS Mode to select IBM emulation (page 31).

IBM Proprinter X24E/XL24E
IBM Proprinter X24/XL24

- To print, follow the instructions given in the manual of the application you are using. Typically, you would select the application's **PRINT** command, make any necessary changes in the window that appears (such as the number of copies to be printed), and then press the **Enter** key to start printing.

Chapter 7: Paper Handling

Your printer is designed to print on a variety of paper types. This chapter tells you everything you need to know about paper, and how to set the printer up for manual paper feed. In this chapter, you will learn about:

- Selecting the best type of paper
- Adjusting for paper thickness
- Manual sheet feeding
- Clearing paper jams

Selecting paper types

Use the following information when selecting paper.

Cut-Sheet Paper

Width:	2" to 16.5" / 51 to 420 mm
Length:	2.75" to 14" / 70 to 356 mm (min.)
Weight (1-ply):	14 to 42 lbs / 52 to 156 g/m ² / 45 to 135 kg
Multi-part:	11 to 14 lbs / 40 to 52 g/m ² / 34 to 45 kg; pressure sensitive paper
	Total Thickness: 0.014"/0.35 mm
Copies:	Original + 4

Fanfold Paper

Width:	3" to 16" / 76 to 406 mm
Length:	6"/15 2mm (min.)
Weight (1-ply):	14 to 22 lbs / 52 to 82 g/m ² / 45 to 70 kg
Multi-part:	11 to 14 lbs / 40 to 52g/m ² / 34 to 45 kg; pressure sensitive paper
	Total Thickness: 0.014" / 0.35mm
Copies:	Original + 4

Labels

Backing sheet: 3" to 16" / 76 to 406 mm

Thickness:

Backing sheet 0.0028" to 0.0035" / 0.07 to 0.09 mm

Total thickness 0.0075" / 0.19 mm

* Use labels only under normal temperature and humidity conditions.

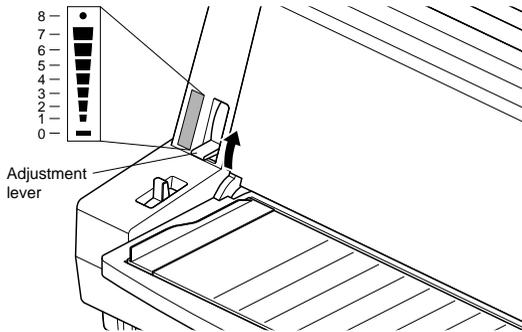
Envelope

#10: 9.4" × 4.1" / 240 × 104 mm

#6: 6.5" × 3.6" / 166 × 92 mm

Adjusting for paper thickness

Paper comes in different weights, normally expressed as gsm (grams per square meter) or lbs (pounds). Some types of forms have multiple pages that make them quite thick. Use the following procedure to change the gap between the print head and the platen and adjust for paper thickness.



- Move the adjustment lever to one of its nine settings. Position 1 is most suitable for single-sheet paper.

The following table provides a general guide for setting the adjustment lever. Experiment with different settings until you find the one that gives you the print quality you want.

Paper Type		Weight Per Sheet	Thickness	Recommended Position
Single-sheet		14 lbs (52 gsm)	0.06 mm	1
		17 lbs (64 gsm)	0.08 mm	1
		21 lbs (81 gsm)	0.10 mm	1
		28 lbs (104 gsm)	0.13 mm	1
		42 lbs (156 gsm)	0.19 mm	2
Multi-part	2-ply	11 lbs (40 gsm)	0.13 mm	2
	3-ply	11 lbs (40 gsm)	0.20 mm	3
	4-ply	11 lbs (40 gsm)	0.26 mm	4
	5-ply	11 lbs (40 gsm)	0.33 mm	5
Labels		—	Max. 0.19 mm	2
Envelope		11 lbs (50 gsm)	0.12 ~ 0.21 mm	2 or 3
		15 lbs (70 gsm)	0.18 ~ 0.30 mm	3
		19 lbs (85 gsm)	0.20 ~ 0.36 mm	4

Important!

Continuous use of the wrong adjustment lever setting can drastically reduce the print head life. Position “0” is used only when the print quality is too light. Setting the lever to position “0” when you are using thin paper may damage the print head.

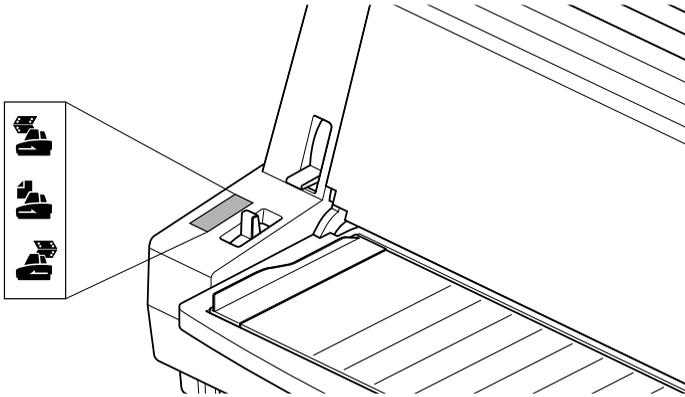
Automatic fanfold feeding

- See “Loading fanfold paper” on page 10 for details on using fanfold paper.

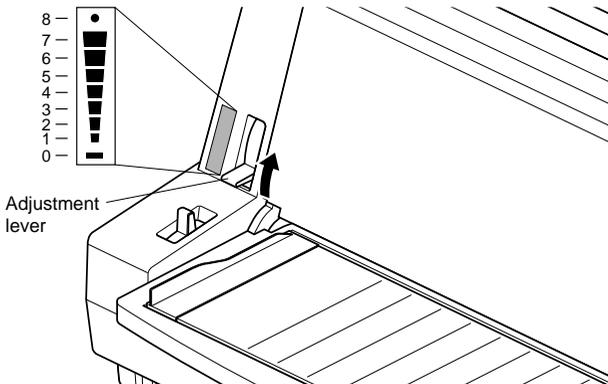
Manual sheet feeding

You can use the following procedure to manually feed cut-sheet paper into the printer.

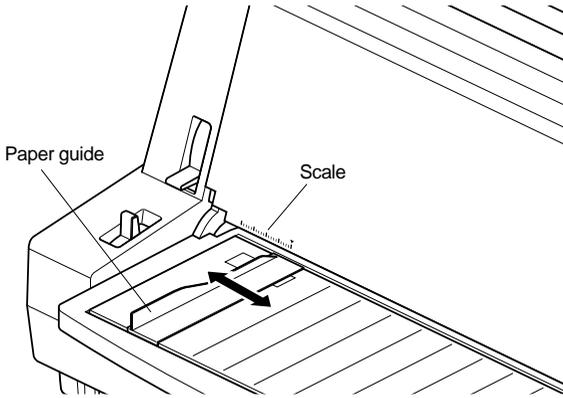
- Make sure that there is no fanfold paper in the printer. If there is, use the procedure under “Parking fanfold paper” on page 15 to park the fanfold paper and prepare for manual sheet feeding.
- Set the release lever on the front of the printer to the cut-sheet position.



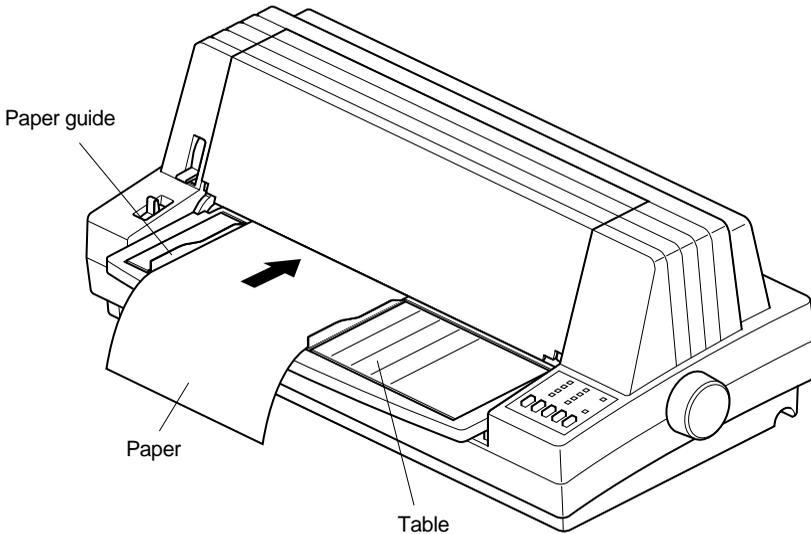
- Set the adjustment lever to the value that matches the thickness of the paper you are using. The setting for normal paper is 1. Set the lever to a larger value for thicker paper, or to a smaller value for thinner paper.



- ❑ Adjust the paper guide to the position you want.
Note that the ▼ mark of the guide indicates where the left margin of the printing will be.



- ❑ Making sure that the left edge of the paper is against the paper guide, insert straight a sheet of paper into the front of the printer as far as it will go. The paper will automatically be fed into the printer.



- ❑ Start the printing operation from your software application.
- ❑ After printing is complete, press **PARK/SET/EJECT** while the printer is on line to eject the paper from the printer.

Note:

If you are inserting letterhead paper, insert the sheet so that it is face up with the letterhead portion up.

Clearing paper jams

Use the following procedure to clear paper jams from the printer.

- Turn the power off.
- Unplug the printer from its AC power outlet.
- Open the front cover of the printer.
- Carefully try to pull the jammed paper from the printer.
If necessary, move the release lever on the front of the printer to the fanfold position or rotate the platen knob to remove the paper.
- Close the front cover of the printer.

Chapter 8: Optional Accessory

This chapter explains how to connect and set up the following optional accessories that are available for this printer:

- Serial-to-Parallel Converter (SPC-8K)
- Push Tractor Unit (CT-15HA)

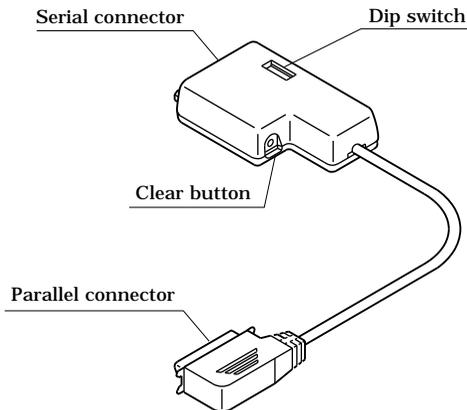
Important!

Always make sure that printer power is turned off whenever installing or removing optional accessories.

Serial-to-Parallel Converter (SPC-8K)

Connecting the serial-to-parallel converter to the printer's parallel connector provides a second serial connection. This provides separate serial connections for two separate computers.

Since this printer is already equipped with one serial interface, connecting the serial-to-parallel converter provides a second connector for serial data communication.

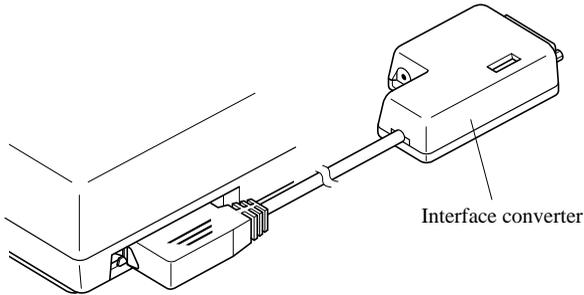


Connecting the Interface Converter

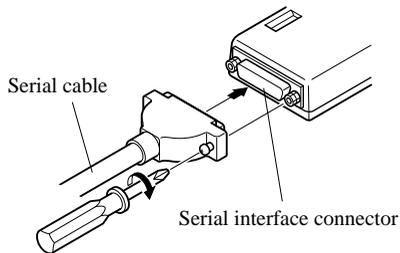
- ❑ Unplug the printer from its AC power outlet.
- ❑ Set the DIP switches on the SPC-8K to the settings you want to use before you connect it to your printer.

See the following section for details on how to set the DIP switches

- ❑ Plug the interface converter's Centronics connector into the socket on the side of the printer and secure it in place with the clips.



- ❑ Plug one end of a serial cable into the serial interface connector's 25-pin D-TYPE connector.

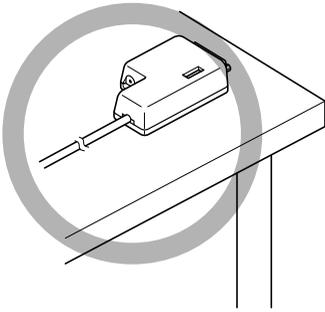


- ❑ Plug the other end of the serial cable into your computer's serial ports. Serial ports are usually marked COM1, COM 2, etc. If your computer has only one serial port, it will be marked COM1.

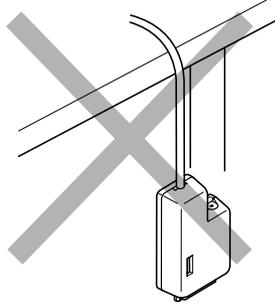
Important!

- ❑ Make sure that the serial-to-parallel converter is resting on a stable, level surface where it will not be subject to vibration or damage.

[CORRECT METHOD]



[INCORRECT METHOD]



Setting the converter's DIP switches

You should set the converter's DIP switches so they match the settings you make on your computer. The table to the right shows the parameter that each DIP switch on the serial-to-parallel converter controls.

The tables below show all of the settings you can make with the serial-to-parallel's DIP switches to control certain parameters. The tables also include the matching settings you have to make in your MS-DOS AUTOEXEC.BAT file or with the Ports option of the Windows Control Panel. The highlighted cells in the tables indicate default settings for the serial-to-parallel converter.

Switch	Function
1	Data length
2	Parity
3	Protocol
4	Protocol
5	Parity
6	Baud rate
7	Baud rate
8	Baud rate

Data Length

Switch 1	Data Length	DOS/Windows Setting
ON	8 bits	8
OFF	7 bits	7

Parity

Switch 2	Switch 5	Parity	DOS/Windows Setting
ON	ON or OFF	None	N
OFF	ON	Odd	O
OFF	OFF	Even	E

Protocol

Switch 3	Switch 4	Protocol
ON	ON	DTR
ON	OFF	XON/XOFF
OFF	ON	ETX/ACK

Baud Rate

Switch 6	Switch 7	Switch 8	Baud Rate	DOS/Windows Setting
OFF	OFF	OFF	150 bps	150
OFF	OFF	ON	300 bps	300
OFF	ON	OFF	600 bps	600
OFF	ON	ON	1200 bps	1200
ON	OFF	OFF	2400 bps	2400
ON	OFF	ON	4800 bps	4800
ON	ON	OFF	9600 bps	9600
ON	ON	ON	19200 bps	19200

Push Tractor Unit (CT-15HA)

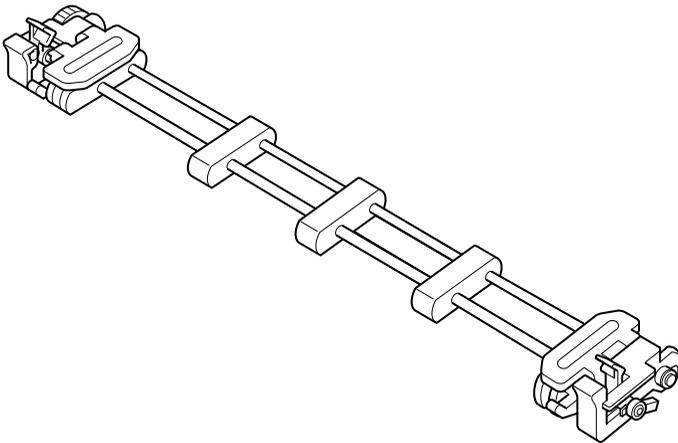
The printer comes with a push tractor unit pre-installed for back-to-front feeding of fanfold paper. You can use the push tractor unit as it is, or you can move it to the front of the printer for front-to-back feeding.

Users who find themselves having to frequently move the push tractor unit between the front and back may wish to purchase an optional CT-15HA Push Tractor Unit. Then the feed direction can be switched whenever necessary, without having to physically move the push tractor unit each time.

The following procedures describe how to remove the push tractor unit from the printer and how to install it. You can use these procedures when moving the push tractor unit between the front and back of the printer, or when installing a second unit.

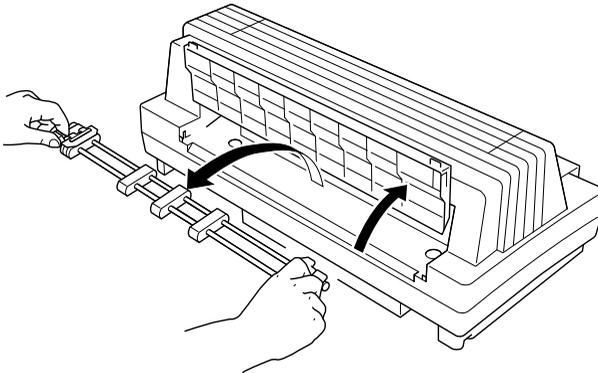
Note:

Use the release lever (page 11) to specify whether paper should be fed back-to-front or front-to-back.

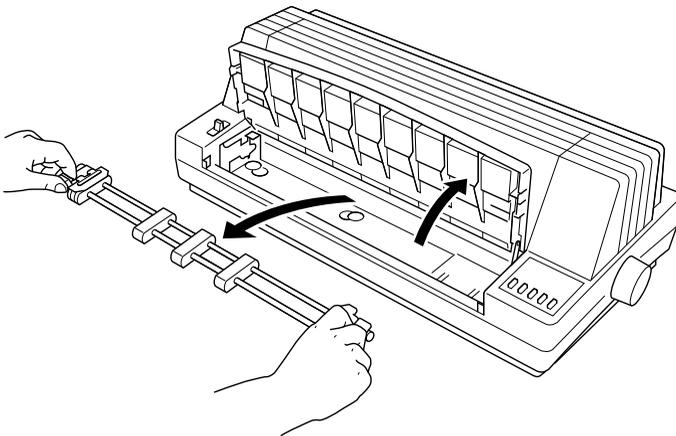


Removing the push tractor unit from the back of the printer

- Make sure that the printer is unplugged from its AC power source.
- Open the cover where the push tractor unit is located.
If the push tractor unit is located in the back of the printer, open the back cover. If it is located in the front of the printer, open the document table. In either case, opening the cover as far as it will go will cause it to lock in place.
- Pressing down on the two releases on the left and right of the tractor feeder, lift it up and away from the printer.



[Back of the printer]



[Front of the printer]

- Close the cover of the printer.

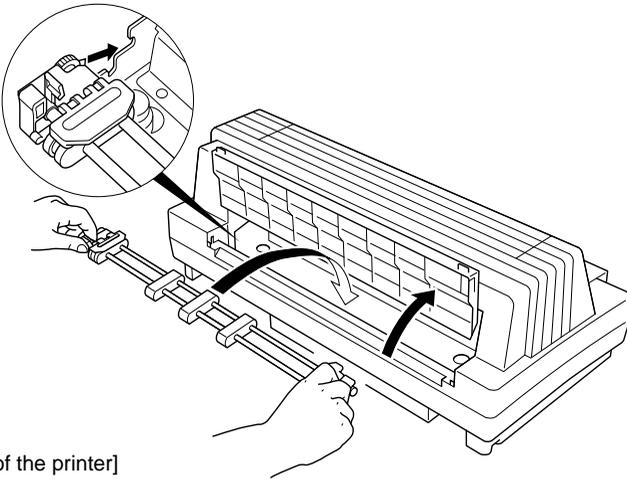
Installing the push tractor unit

- ❑ Make sure that the printer is unplugged from its AC power source.
- ❑ Open the cover where you want to install the push tractor unit.

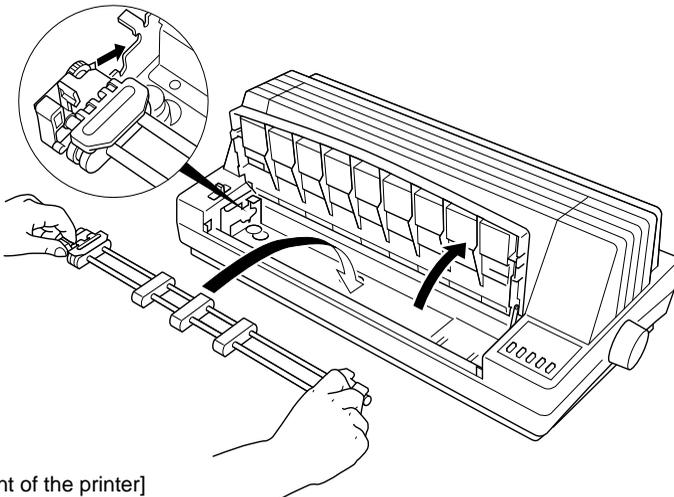
If you want to install the push tractor unit in the back of the printer, open the back cover. If you want to install it in the front of the printer, open the document table.

In either case, opening the cover as far as it will go will cause it to lock in place.

- ❑ Pressing down on the two releases on the left and right of the tractor feeder, carefully lower it into the printer, making sure that the proper parts of the tractor feeder fit into the slots provided in the printer as shown in the illustration below.



[Back of the printer]



[Front of the printer]

- ❑ Close the cover of the printer.

Appendix A: Troubleshooting

The appendix will provide help if you experience problems with your printer. It tells you how to test the printer, how to check system software settings, and how to adjust the vertical alignment. In addition, there is information on actions to take for specific problems, and on the meanings of printer beep tones.

Warning!

The printer uses high voltage. Do not attempt any other repair or maintenance except as expressly recommended in this appendix. Unauthorized repair and maintenance not only exposes you to the danger of electrical shock, it also may damage your printer and void your warranty.

Short test

Use the following procedure to test the printer to make sure that everything is working correctly.

- Make sure that paper is loaded in the printer.
- Turn off the printer.
- While holding down the control panel's **ON LINE** button, turn the printer back on.

This test prints the version number of the software contained in the printer's ROM followed by the current EDS settings.

- To stop demo printing, turn the printer off.

Long test

Use the following procedure to test the printer to make sure that everything is working correctly.

- Make sure that paper is loaded in the printer.
- Turn off the printer.
- While holding down the control panel's **PAPER FEED** button, turn the printer back on.

This test prints the title and seven lines of text, and then continues to print the entire character set for each font and pitch available.

- To stop demo printing, turn the printer off.

Note:

Test printing prints across the entire width of the carriage. Make sure that the printer is loaded with the widest paper available in order to avoid damage to the print head and platen.

Hexadecimal dump

This procedure prints in hexadecimal format all codes (character codes and control codes) that are sent to the printer by the computer. The printer does not execute any control codes (such as 0A - linefeed), it just prints them out. The hexadecimal dump is useful when you are writing programs for printer control.

- Make sure that paper is loaded in the printer.
- Turn off the printer.
- While holding down the control panel's **PAPER FEED** and **ON LINE** buttons, turn the printer back on to enter the Hex Dump Mode.
- To exit the Hex Dump Mode, turn the printer off.

Adjusting the dot alignment

You may never have to use the procedure described in this section, but after you have been using your printer for some time you may find that the dots of some graphics do not align correctly. For example, what should look like:

||||

may come out looking like one of the following:

|||||

or like this

|||||

This is caused when mechanical parts of the printer get out of alignment. This happens only rarely and you may never experience it at all throughout the life of the printer. If you do have problems, use the following procedure to correct it.

- Make sure that paper is loaded in the printer.
- Turn off the printer.

Troubleshooting guide

Use the following table to help track down the causes of problems and to determine the best solution to deal with them.

Problem	Possible Cause	Recommended Action
The ON LINE indicator does not light.	The printer is not receiving power.	Check whether the power cord is correctly plugged into the power outlet.
		Check whether the power outlet is working by unplugging the printer and plugging in another device.
Printer sounds like it is printing, but it is not. Printing is weak.	The ribbon is jammed, twisted, or not set correctly between the print head and the print head shield.	Make sure that the ribbon cassette is installed correctly.
	The printer is not set up correctly for the thickness of paper you are using.	Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 58.
	The ribbon is worn out or "used up."	Replace the ribbon with a new one.
Printer test works, but printer will not print out data from the attached computer.	The wrong emulation is selected.	Check the emulation selection and change it if necessary. See page 31.
	Your application program's or system software's printer selection is wrong.	Check the printer selection of your application software.
	The computer's system software is not set up properly for the printer or for the port you are using.	Check the system software settings. Check the settings for LPT1, COM 1, or COM 2 if you are using the Serial Interface.

Problem	Possible Cause	Recommended Action
Printer test works, but printer will not print out data from the attached computer.	The interface cable is connected incorrectly or damaged.	Check to make sure that the printer interface cable is connected correctly. If it is, try a different cable.
Printer does not feed paper properly.	Jamming paper.	Remove all paper from the printer and then reload it.
	The printer is not set up correctly for the thickness of paper being used.	Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 58.
Line spacing is incorrect.	Jamming paper.	Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 58.
	The line spacing or leading selected in your application program is wrong.	Choose a different line spacing or leading setting from your application.
	Auto line feed with carriage return is enabled.	Use the EDS Mode to disable auto line feed with carriage return (page 32).
Lines print over each other.	Auto line feed with carriage return is disabled.	Use the EDS Mode to enable auto line feed with carriage return (page 32).
	Jamming paper.	Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 58.

Problem	Possible Cause	Recommended Action
Incorrect number of lines are printed on the page.	Auto line feed with carriage return is enabled.	Use the EDS Mode to disable auto line feed with carriage return (page 32).
	The line spacing or leading selected by your application program is wrong.	Choose a different line spacing or leading setting from your application.
	Dot adjustment is not correct.	See "Adjusting the dot alignment" on page 71.
Text and graphics are malformed. Print quality is poor.	The ribbon is worn out or "used up".	Replace the ribbon with a new one.
	The printer is not set up correctly for the thickness of paper being used.	Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 58.
	The print head is damaged.	Return the printer to your dealer for repair.
Forms are smudged. Printing is too dark.	The printer is not set up correctly for the thickness of paper being used.	Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 58.
	The ribbon is jammed, twisted, or not set correctly between the print head and the print head shield.	Make sure that the ribbon cassette is installed correctly. See "Installing the ribbon cassette" on page 6.
	Print head shield is damaged or missing.	Return it to your dealer for repair.

Problem	Possible Cause	Recommended Action
Printer case is hot.	The printer's air vents are blocked or obstructed.	Switch off the printer and let it cool. Check the air vents on the bottom of the printer to see if they are blocked. Remove the obstruction if possible. If the problem persists, return the printer to your dealer for repair.
Printer makes excessive noise.	The front cover is removed.	Replace the front cover.
	The printer is vibrating.	Move any objects that are touching the printer.
		Make sure that the printer is on a level steady surface.
Printer prints past the edge of the paper.	Incorrect margin settings are selected by your application program.	Choose different margin settings from your application program.
	The paper guide is not positioned correctly.	Remove the paper and adjust the position of the paper guide. Reload the paper and try printing again.
	The ribbon is jammed, causing the print head to jam.	Make sure that the ribbon cassette is installed correctly. See "Installing the ribbon cassette" on page 6.
	Paper is jamming, causing the print head to jam.	Remove all paper from the printer and reload it. Try printing again.
Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 58.		

Problem	Possible Cause	Recommended Action
<p>Left margin moves to the right during printing.</p>	<p>The paper is not loaded correctly, causing the print head to jam.</p>	<p>Remove all paper from the printer and reload it. Try printing again.</p>
	<p>The ribbon cassette is not installed correctly, causing the print head to jam.</p>	<p>Make sure that the ribbon cassette is installed correctly. See "Installing the ribbon cassette" on page 6.</p>
	<p>The printer is not set up correctly for the thickness of paper being used.</p>	<p>Set up the printer for the paper thickness you are using. See "Adjusting for paper thickness" on page 58.</p>
	<p>Inappropriate settings are selected by your application program.</p>	<p>Choose different settings in your application.</p>
	<p>Static electricity caused by interference from nearby electrical devices or by low-level humidity is affecting printer operation.</p>	<p>Make sure that the printer is not too close to any devices with electric motors or that raise the humidity level.</p>
<p>Some characters are printed incorrectly.</p>	<p>The wrong emulation is selected.</p>	<p>Check the emulation selection and change it if necessary. See page 31.</p>
	<p>The wrong character table, code page, or international character set is selected.</p>	<p>Use the EDS Mode to select the correct character table, code page, or international character set (page 34).</p>
	<p>Static electricity caused by interference from nearby electrical devices or by low-level humidity is affecting printer operation.</p>	<p>Make sure that the printer is not too close to any devices with electric motors or that raise the humidity level.</p>

Problem	Possible Cause	Recommended Action
Some characters are printed incorrectly.	Inappropriate settings are selected by your application program.	Choose different settings in your application.
	Wires are missing from the print head.	Return the printer to your dealer for repair.
Printer behaves erratically. Printing suddenly stops.	The interface cable is connected incorrectly or damaged.	Check to make sure that the printer interface cable is connected correctly. If it is, try a different cable.
	Static electricity caused by interference from nearby electrical devices or by low-level humidity is affecting printer operation.	Make sure that the printer is not too close to any devices with electric motors or that raise the humidity level.

Checking system software settings in Windows

Whenever you have problems printing from a Windows application, you should check the following four things:

- ✓ Is the printer you are using set as the default printer?
- ✓ Is the drive setup correctly?
- ✓ Is the printer you are using correctly selected in your application?
- ✓ Is the correct port selected?

You should also refer to your *Microsoft Windows User's Guide* for other information that might be helpful. If you still experience problems, consult your software dealer.

To check the default printer selection

- Double-click the **Control Panel** icon in the Main window.
- Double-click the **Printers** icon.
- Check to see that the name of your printer is the default printer. If it is not, double-click on the name of your printer in the list of installed printers.
- Click on **Close** to return to the Control Panel window.

To check the Driver Setup

- Double-click the **Control Panel** icon in the Main window.
- Double-click the **Printers** icon.
- Double-click on the name of your printer in the list of installed printers.
- Click on **Setup**.
- Check resolution, paper source, etc.
- Click OK.
- Click on Close to return to the Control Panel window.

To check the application printer selection

- Select **Print** from the application's **File** menu, and a window appears listing available printers.
- Check to see that the name of your printer is selected. If it is not, select it and try printing from your application again.

To check the port

- Double-click the **Control Panel** icon in the Main window.
- Double-click the **Printers** icon.
- Double-click on the name of your printer in the list of installed printers.
- Click on **Connect**.
- Make sure that your printer cable is connected to the port highlighted in the list of ports.
If you are using a parallel cable, you will probably be using LPT1. If you are using the serial interface, you should be using COM1 or COM2. Click on the correct port name.
- Click **OK**.
- Click on **Close** to return to the Control Panel window.

Checking system software settings in MS-DOS

If you are using a parallel cable and cannot print a text file using the MS-DOS **PRINT** command, you may have a problem with your **AUTOEXEC.BAT** file. Open the file and look for the following line:

```
MODE LPT1:=COM1 or MODE LPT1:=COM2
```

These lines indicate you are using a serial cable connection, and so you should delete them, save the **AUTOEXEC.BAT** file, reboot and try printing again.

Of course, if you are having problems printing with the optional serial-to-parallel converter, you should conversely check to make sure that one of the above lines is included in your **AUTOEXEC.BAT** file. The file must also contain information on parameter settings. For details, see the user's manual that comes with the optional Serial-to-Parallel Interface Converter.

If the above is not the problem or if you make the above changes and still experience problems printing using the MS-DOS **PRINT** command, refer to your *MS-DOS Users' Guide* or consult your software dealer.

If you are successful in printing using the MS-DOS **PRINT** command but cannot print from an application, check to see what printer driver is selected in the application. See "Setting up for printing with MS-DOS" on page 56. If this does not help, consult your software dealer.

Appendix B: Specifications

Printing System	Serial Impact Dot-Matrix			
Printing Speed	Pitch	HS-Draft (cps/dpi)	Draft (cps/dpi)	LQ (cps/dpi)
	Pica (10 cpi)	400/80H	300/120H	100/360H
	Elite (12 cpi)		360/120H	120/360H
	Semi-condensed (15 cpi (S))		450/120H	150/360H
	Semi-condensed (15 cpi (I))		225/240H	150/360H
	Condensed pica (17 cpi)		255/240H	170/360H
	Condensed elite (20 cpi)		300/240H	198/360H
	24 cpi (I)		360/240H	238/360H
	H: half-dot (S): Standard mode only (I): IBM mode only			
Print Direction	Draft:	Uni-directional/bi-directional logic seeking (selectable)		
	LQ:	Uni-directional/bi-directional logic seeking (selectable)		
	Bit-Image:	Uni-directional/bi-directional logic seeking (selectable)		
Print Head	Number of pins:	24		
	Life:	200 million dots/pin (adjustment lever position 1 to 3) 100 million dots/pin (adjustment lever position 4 to 8)		
Line Spacing	1/6", 1/8" 7/60", 7/72", n/72", n/180", n/216", n/360": software			
Character Matrix	Pitch	HS-Draft	Draft	LQ
	Pica (10 cpi)	24 × 7H	24 × 9H	24 × 31H
	Elite (12 cpi)		24 × 9H	24 × 27H
	Semi-condensed (15 cpi(S))		16 × 7H	16 × 21H
	Semi-condensed (15 cpi(I))		24 × 9H	24 × 16H
	Condensed pica (17 cpi)		24 × 9H	24 × 16H
	Condensed elite (20 cpi)		24 × 9H	24 × 16H
	24 cpi (I)		24 × 9H	24 × 14H
	H: half-dot (S): Standard mode only (I): IBM mode only			
Environment	Operating temperature:	41°F to 95°F (5°C to 35°C)		
	Storage temperature:	-22°F to 149°F (-30°C to 65°C)		
	Operating humidity:	30% to 80% (noncondensing)		
	Storage humidity:	20% to 90% (noncondensing)		

Paper

Cut-sheet

Paper width:	2" to 16.5" / 51 to 420 mm
Paper length:	2.75" to 14" / 70 to 356 mm
Paper weight (1-ply):	14 to 42 lbs / 52 to 156 g/m ² / 45 to 135 kg
Multi-part:	11 to 14 lbs / 40 to 52 g/m ² / 34 to 45 kg; pressure sensitive paper
	Total thickness: 0.014" / 0.35 mm
Copies:	Original + 4

Fanfold

Paper width:	3" to 16" / 76 to 406 mm
Paper length	6" / 152 mm (min.)
Paper weight (1-ply):	14 to 22 lbs / 52 to 82 g/m ² / 45 to 70 kg
Multi-part:	11 to 14 lbs / 40 to 52 g/m ² / 34 to 45 kg; pressure sensitive paper
	Total thickness: 0.014" / 0.35 mm
Copies:	Original + 4

Labels

Backing sheet:	3" to 16" / 76 to 406 mm
Thickness:	
Backing sheet	0.0028" to 0.0035" / 0.07 to 0.09 mm
Total thickness	0.0075" / 0.19 mm max.

Envelope

#10	9.4" × 4.1" / 240 × 104 mm
#6	6.5" × 3.6" / 166 × 92 mm

Emulation

Standard Mode: EPSON ESC/P (24-pin)
 NEC Graphic Compatible
 IBM Mode: Proprinter XL24E

Interface

Standard: Centronics parallel
 RS-232C serial

Ribbon Type

On-carriage, dedicated
 Monochrome: Black only
 LZ24HD (Standard)

Ribbon Life

LZ24HD: 4million characters (ASCII Draft)

Dimensions and Weight

Width: 25.6" / 650 mm
 Depth: 13.1" / 333 mm
 Height: 9.5" / 240 mm
 Weight: 28.7 lbs. / 13 kg

Power Supply

110V AC +20%/-18%, 230V AC +14%/-13%; 50/60Hz (depending on country of purchase)

Power Consumption

17 W during stand-by
 63 W during ASCII draft printing

Options

SPC-8K Serial-To-Parallel Converter
 CT-15HA Push Tractor Unit

Appendix C: Interface Pin Outs

Parallel Interface

Pin	Name	Function
1	STROBE	Goes low for $\geq 0.5\mu\text{s}$ when active.
2	DATA0	These signals represent information for the 1st through 8th bit of parallel data, respectively. Each signal is HIGH when data is logical 1, and LOW when logical 0.
3	DATA1	
4	DATA2	
5	DATA3	
6	DATA4	
7	DATA5	
8	DATA6	
9	DATA7	
10	ACK	10 μs low to acknowledge receipt of data.
11	BUSY	Printer sets line low when ready to receive data.
12	PAPER	High when paper runs out.
13	SELECT	High when printer is on-line.
14	AFXT	Printer ignores this signal.
15	Not used.	
16	SIGNAL GND	Signal ground
17	CHASSIS	Chassis ground (isolated from signal ground)
18	+5V	+5V DC output from printer
19 - 30	GND	Twisted pair ground return
31	RESET	Printer is reset when this signal goes low.
32	ERROR	Low when printing cannot continue due to error.
33	EXT GND	External ground
34 - 35	Not used	
36	SELECT IN	Printer ignores this signal

Serial Interface

Pin	Name	Function
1	CHASSIS	Printer chassis ground
2	TXD	Data from printer
3	RXD	Data to printer
4	RTS	Always space
5	CTS	Space when computer is ready to send data. Printer ignores this signal.
6	Not used.	
7	GND	Signal ground
8 - 10	Not used.	
11	RCH	Printer sets line to space when ready to receive data. Same signal as Pin 20.
12	Not used.	
13	Not used. (signal ground)	
14 - 19	Not used.	
20	DTR	Printer sets line to space when ready to receive data.
21 - 25	Not used.	

Appendix D: Character Sets

Standard Italic Character Set

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	<NUL>		0	@	P	`	p	à	Š		0	@	P	`	p	
1	<DC1>	!	1	A	Q	a	q	è	ß	!	1	A	Q	a	q	
2	<DC2>	"	2	B	R	b	r	ù	Æ	"	2	B	R	b	r	
3	<DC3>	#	3	C	S	c	s	ò	æ	#	3	C	S	c	s	
4	<DC4>	\$	4	D	T	d	t	ì	Ø	\$	4	D	T	d	t	
5		%	5	E	U	e	u	°	ø	%	5	E	U	e	u	
6		&	6	F	V	f	v	£	•	&	6	F	V	f	v	
7	<BEL>	'	7	G	W	g	w	ï	Ä	'	7	G	W	g	w	
8	<BS> <CAN>	(	8	H	X	h	x	ı	Ö	(	8	H	X	h	x	
9	<HT>)	9	I	Y	i	y	ñ	Ù)	9	I	Y	i	y	
A	<LF>	*	:	J	Z	j	z	ñ	ä	*	:	J	Z	j	z	
B	<VT> <ESC>	+	;	K	[	k	{	ı	ö	+	;	K	[	k	{	
C	<PF> <FS>	,	<	L	\	l	!	Ŕ	ü	,	<	L	\	l	!	
D	<CR>	-	=	M	]	m	}	À	É	-	=	M	]	m	}	
E	<SO>	.	>	N	^	n	~	ã	é	.	>	N	^	n	~	
F	<SI>	/	?	O	_	o		ç	¥	/	?	O	_	o		

International Character Set

The character codes shown in the table are hexadecimal.

Country	23	24	40	58	5A	5B	5C	5D	5E	60	7B	7C	7D	7E
U.S.A.	#	\$	@	X	Z	[	\	\]	^	`	{	|	}	~
FRANCE	#	\$	à	X	Z	°	ç	Š	^	`	é	ù	è	•
GERMANY	#	\$	Š	X	Z	Ä	ö	Ü	^	`	ä	ö	ü	ß
ENGLAND	£	\$	@	X	Z	[	\	\]	^	`	{	|	}	~
DENMARK 1	#	\$	@	X	Z	Æ	Ø	Å	^	`	æ	ø	å	~
SWEDEN	#	ı	é	X	Z	Ä	Ö	Å	Ü	é	ä	ö	å	ü
ITALY	#	\$	@	X	Z	°	\	é	^	ù	à	ò	è	ı
SPAIN 1	Ŕ	\$	@	X	Z	ı	Ñ	ı	^	˘	•	ñ	}	~
JAPAN	#	\$	@	X	Z	[	¥	]	^	`	{	|	}	~
NORWAY	#	ı	é	X	Z	Æ	Ø	Å	Ü	é	æ	ø	å	ü
DENMARK 2	#	\$	é	X	Z	Æ	Ø	Å	Ü	é	æ	ø	å	ü
SPAIN 2	#	\$	á	X	Z	ı	Ñ	ı	é	˘	ı	ñ	ó	ú
LATIN AMERICA	#	\$	á	X	Z	ı	Ñ	ı	é	ü	ı	ñ	ó	ú
KOREA	#	\$	@	X	Z	[	₩	]	^	`	{	|	}	~
IRELAND	#	\$	@	ú	/	[	\	\]	^	`	À	É	Ó	~
LEGAL	#	\$	Š	X	Z	°	'	"	¶	`	©	®	+	™

IBM Character Set #2 Code Page #437 (IBM-PC)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	<NUL>			0	@	P	^	p	Ç	ê	á	Ë	É	ú	α	≡
1	<DC1>	!	1	A	Q	a	q	ú	æ	í	Ë	Ë	Ë	Ë	β	±
2	<DC2>	"	2	B	R	b	r	é	Æ	ó	Ë	Ë	Ë	Ë	Γ	¿
3	<DC3>	#	3	C	S	c	s	á	ó	ú	Ë	Ë	Ë	Ë	κ	¡
4	<DC4>	\$	4	D	T	d	t	è	ò	ñ	Ë	Ë	Ë	Ë	Σ	¡
5	¢	§	%	5	E	U	e	u	à	ò	ñ	Ë	Ë	Ë	σ	¡
6	£		&	6	F	V	f	v	À	ó	á	Ë	Ë	Ë	μ	+ ∞
7	<BEL>	'		7	G	W	g	w	ç	ó	é	Ë	Ë	Ë	τ	∞
8	<BS ><CAN>	(		8	H	X	h	x	ê	ý	¿	Ë	Ë	Ë	ø	°
9	<HT >)		9	I	Y	i	y	ë	ö	¿	Ë	Ë	Ë	θ	•
A	<LF >	*	:	J	Z	j	z	è	ü	¿	Ë	Ë	Ë	Ë	Ω	•
B	<VT ><ESC>	+	:	K	[	k	{	Ë	Ë	Ë	Ë	Ë	Ë	Ë	δ	¡
C	<PF ><PS >	.	<	L	\	l	|	Ë	Ë	Ë	Ë	Ë	Ë	Ë	ε	¡
D	<CR >	-	=	M	]	m	}	Ë	Ë	Ë	Ë	Ë	Ë	Ë	ϕ	¡
E	<SO >	>		N	^	n	~	Ë	Ë	Ë	Ë	Ë	Ë	Ë	ç	■
F	<SI >	/	?	O	_	o		A	f	»	Ë	Ë	Ë	Ë	∅	■

Character Set #1

Other characters are the same as those for Character Set #2.

	0	1
0	<NUL>	
1	<DC1>	
2	<DC2>	
3	<DC3>	
4	<DC4>	
5		
6	<SYN>	
7	<BEL>	
8	<BS ><CAN>	
9	<HT >	
A	<LF >	
B	<VT ><ESC>	
C	<PF ><PS >	
D	<CR >	
E	<SO >	
F	<SI >	

	8	9
0	<NUL>	
1	<DC1>	
2	<DC2>	
3	<DC3>	
4	<DC4>	
5		
6	<SYN>	
7	<BEL>	
8	<BS ><CAN>	
9	<HT >	
A	<LF >	
B	<VT ><ESC>	
C	<PF ><PS >	
D	<CR >	
E	<SO >	
F	<SI >	

IBM Special Character Set

The following characters can be printed using the <ESC> ^ command.

	0	1
0	⊙	▶
1	⊙	◀
2	⊙	⋈
3	♥	||
4	♣	¶
5	♣	§
6	♣	—
7	•	↑
8	□	↑
9	○	↓
A	⊙	→
B	⊙	←
C	⊙	↗
D	⊙	↘
E	⊙	▲
F	⊙	▼

**Code Page #850
Multi-lingual**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	É	⋈	Ê	Ë	Ì	Í
1	Ï	Ð	Ñ	⋈	Ò	Ó	Ô	Õ
2	Ö	×	Ø	⋈	Ù	Ú	Û	Ü
3	Ý	ÿ	á	⋈	â	ã	ä	å
4	æ	ç	ø	⋈	é	ê	ë	ì
5	í	î	ï	⋈	ê	ë	ì	í
6	î	ï	ð	⋈	ñ	ò	ó	ô
7	õ	ö	÷	⋈	ù	ú	û	ü
8	ý	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
9	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
A	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
B	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
C	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
D	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
E	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
F	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ

**Code Page #860
Portuguese**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	É	⋈	Ê	Ë	Ì	Í
1	Ï	Ð	Ñ	⋈	Ò	Ó	Ô	Õ
2	Ö	×	Ø	⋈	Ù	Ú	Û	Ü
3	Ý	ÿ	á	⋈	â	ã	ä	å
4	æ	ç	ø	⋈	é	ê	ë	ì
5	í	î	ï	⋈	ê	ë	ì	í
6	î	ï	ð	⋈	ñ	ò	ó	ô
7	õ	ö	÷	⋈	ù	ú	û	ü
8	ý	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
9	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
A	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
B	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
C	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
D	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
E	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
F	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ

**Code Page #861
Icelandic**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	É	⋈	Ê	Ë	Ì	Í
1	Ï	Ð	Ñ	⋈	Ò	Ó	Ô	Õ
2	Ö	×	Ø	⋈	Ù	Ú	Û	Ü
3	Ý	ÿ	á	⋈	â	ã	ä	å
4	æ	ç	ø	⋈	é	ê	ë	ì
5	í	î	ï	⋈	ê	ë	ì	í
6	î	ï	ð	⋈	ñ	ò	ó	ô
7	õ	ö	÷	⋈	ù	ú	û	ü
8	ý	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
9	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
A	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
B	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
C	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
D	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
E	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ
F	ÿ	ÿ	ÿ	⋈	ÿ	ÿ	ÿ	ÿ

Code Page #863 Canadian French

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	É	Ê	Ë	Ì	Í	Î
1	Û	Ü	Ý	Þ	ß	à	á	â
2	ë	è	ó	ô	õ	ö	÷	¸
3	á	â	ã	ä	å	æ	ç	¸
4	À	Á	Â	Ã	Ä	Å	Æ	Ç
5	À	Á	Â	Ã	Ä	Å	Æ	Ç
6	À	Á	Â	Ã	Ä	Å	Æ	Ç
7	À	Á	Â	Ã	Ä	Å	Æ	Ç
8	À	Á	Â	Ã	Ä	Å	Æ	Ç
9	À	Á	Â	Ã	Ä	Å	Æ	Ç
A	À	Á	Â	Ã	Ä	Å	Æ	Ç
B	À	Á	Â	Ã	Ä	Å	Æ	Ç
C	À	Á	Â	Ã	Ä	Å	Æ	Ç
D	À	Á	Â	Ã	Ä	Å	Æ	Ç
E	À	Á	Â	Ã	Ä	Å	Æ	Ç
F	À	Á	Â	Ã	Ä	Å	Æ	Ç

Code Page #865 Nordic

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	É	Ê	Ë	Ì	Í	Î
1	Û	Ü	Ý	Þ	ß	à	á	â
2	ë	è	ó	ô	õ	ö	÷	¸
3	á	â	ã	ä	å	æ	ç	¸
4	À	Á	Â	Ã	Ä	Å	Æ	Ç
5	À	Á	Â	Ã	Ä	Å	Æ	Ç
6	À	Á	Â	Ã	Ä	Å	Æ	Ç
7	À	Á	Â	Ã	Ä	Å	Æ	Ç
8	À	Á	Â	Ã	Ä	Å	Æ	Ç
9	À	Á	Â	Ã	Ä	Å	Æ	Ç
A	À	Á	Â	Ã	Ä	Å	Æ	Ç
B	À	Á	Â	Ã	Ä	Å	Æ	Ç
C	À	Á	Â	Ã	Ä	Å	Æ	Ç
D	À	Á	Â	Ã	Ä	Å	Æ	Ç
E	À	Á	Â	Ã	Ä	Å	Æ	Ç
F	À	Á	Â	Ã	Ä	Å	Æ	Ç

Code Page #866 Russian

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	б	в	г	д	е
1	Б	С	б	г	д	е	ж	з
2	В	Т	в	г	д	е	ж	з
3	Г	У	г	д	е	ж	з	и
4	Д	Ф	д	е	ж	з	и	й
5	Е	Х	е	ж	з	и	й	к
6	Ж	Ц	ж	з	и	й	к	л
7	З	Ч	з	и	й	к	л	м
8	И	Ш	и	й	к	л	м	н
9	Й	Щ	й	к	л	м	н	о
A	К	Ь	к	л	м	н	о	п
B	Л	Ы	л	м	н	о	п	р
C	М	Ъ	м	н	о	п	р	с
D	Н	Э	н	о	п	р	с	т
E	О	Ю	о	п	р	с	т	у
F	П	Я	п	р	с	т	у	ф

Code Page #3840 IBM-Russian

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	б	в	г	д	е
1	Б	С	б	г	д	е	ж	з
2	В	Т	в	г	д	е	ж	з
3	Г	У	г	д	е	ж	з	и
4	Д	Ф	д	е	ж	з	и	й
5	Е	Х	е	ж	з	и	й	к
6	Ж	Ц	ж	з	и	й	к	л
7	З	Ч	з	и	й	к	л	м
8	И	Ш	и	й	к	л	м	н
9	Й	Щ	й	к	л	м	н	о
A	К	Ь	к	л	м	н	о	п
B	Л	Ы	л	м	н	о	п	р
C	М	Ъ	м	н	о	п	р	с
D	Н	Э	н	о	п	р	с	т
E	О	Ю	о	п	р	с	т	у
F	П	Я	п	р	с	т	у	ф

**Code Page #3841
Gost-Russian**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	г	Г		0	ю	п	Ш	Ш
1	э	Э	!	1	я	я	А	Я
2	ё	Ё	"	2	б	р	Б	Р
3	і	І	#	3	ц	с	Ц	С
4	ї	Ї	и	4	д	т	Д	Т
5	ј	Ј	%	5	е	у	В	У
6	к	К	&	6	ф	ж	Ф	Ж
7	ё	Ё	'	7	х	в	Г	В
8	у	У	(	8	г	ь	Х	Ь
9	у	У	)	9	и	ы	И	Ы
A	х	Х	*	:	я	э	Х	Э
B	н	Н	+	;	к	и	К	И
C	ч	Ч	,	<	п	э	Л	Э
D	ч	Ч	-	=	м	ц	М	Ц
E	е	Е	.	>	п	ч	Н	Ч
F	э	Э	/	?	о	ь	О	Ь

**Code Page #3843
Polish**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	С	Е	2	☺	L	и	α	ш
1	u	e	Z	☹	↓	т	β	±
2	e	t	ó	☹	Т	п	Г	2
3	á	ó	ó	|	↓	и	х	Δ
4	á	ó	n	↓	-	h	Σ	∫
5	á	С	N	↓	↓	F	σ	∫
6	á	ó	z	↓	↓	т	μ	∞
7	с	ó	z	↓	↓	т	μ	∞
8	á	ó	z	↓	↓	т	μ	∞
9	á	ó	z	↓	↓	т	μ	∞
A	á	ó	z	↓	↓	т	μ	∞
B	Y	á	z	↓	↓	т	μ	∞
C	I	E	z	↓	↓	т	μ	∞
D	с	Y	z	↓	↓	т	μ	∞
E	X	z	z	↓	↓	т	μ	∞
F	A	f	ó	↓	↓	т	μ	∞

**Code Page #3844
CS2**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	С	Е	á	☺	L	и	α	ш
1	u	z	i	☹	↓	т	β	±
2	á	z	ó	☹	Т	п	Г	2
3	á	ó	ó	|	↓	и	х	Δ
4	á	ó	n	↓	-	h	Σ	∫
5	á	ó	N	↓	↓	F	σ	∫
6	á	ó	z	↓	↓	т	μ	∞
7	с	ó	z	↓	↓	т	μ	∞
8	á	ó	z	↓	↓	т	μ	∞
9	E	ó	z	↓	↓	т	μ	∞
A	L	ó	z	↓	↓	т	μ	∞
B	I	S	z	↓	↓	т	μ	∞
C	I	E	z	↓	↓	т	μ	∞
D	I	Y	z	↓	↓	т	μ	∞
E	X	z	z	↓	↓	т	μ	∞
F	A	z	z	↓	↓	т	μ	∞

**Code Page #3845
Hungarian**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	С	Е	á	☺	L	и	α	ш
1	u	z	i	☹	↓	т	β	±
2	á	z	ó	☹	Т	п	Г	2
3	á	ó	ó	|	↓	и	х	Δ
4	á	ó	n	↓	-	h	Σ	∫
5	á	ó	N	↓	↓	F	σ	∫
6	á	ó	z	↓	↓	т	μ	∞
7	с	ó	z	↓	↓	т	μ	∞
8	á	ó	z	↓	↓	т	μ	∞
9	E	ó	z	↓	↓	т	μ	∞
A	á	ó	z	↓	↓	т	μ	∞
B	I	z	z	↓	↓	т	μ	∞
C	I	E	z	↓	↓	т	μ	∞
D	I	Y	z	↓	↓	т	μ	∞
E	X	z	z	↓	↓	т	μ	∞
F	A	f	ó	↓	↓	т	μ	∞

**Code Page #3846
Turkish**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	Á	␣	Ł	μ	α	≡
1	ü	æ	İ	␣	ł	π	β	±
2	é	Ê	Ó	␣	Ť	Π	Γ	¿
3	À	ò	ú	|	†	π	π	¿
4	È	ø	Ë	†	-	ε	Σ	ƒ
5	á	ó	Ŕ	†	†	ƒ	σ	ƒ
6	À	ú	Ġ	†	†	π	μ	+
7	ç	è	É	†	†	†	φ	°
8	ê	ë	İ	†	†	†	φ	°
9	è	é	Ŕ	†	†	†	θ	°
A	é	ê	Ŧ	†	†	†	Ω	°
B	ÿ	ç	Ê	†	†	†	ó	°
C	ı	ı	Ë	†	†	†	≡	°
D	ı	ı	ı	†	†	†	ρ	°
E	ı	ı	ı	†	†	†	ε	°
F	ı	ı	ı	†	†	†	π	°

**Code Page #3847
Brazil-ABNT**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0			°	À	Đ	À	d	
1		ı	±	À	Ŕ	À	Ŕ	
2		ç	±	À	ò	À	ò	
3		ı	±	À	ó	À	ó	
4		ı	±	À	ô	À	ô	
5		ı	±	À	õ	À	õ	
6		ı	±	À	ö	À	ö	
7		ı	±	Ç	°	ç	°	
8		ı	±	°	°	°	°	
9		ı	±	°	°	°	°	
A		ı	±	°	°	°	°	
B		ı	±	°	°	°	°	
C		ı	±	ı	ı	ı	ı	
D		ı	±	ı	ı	ı	ı	
E		ı	±	ı	ı	ı	ı	
F		ı	±	ı	ı	ı	ı	

**Code Page #3848
Brazil-ABICOMP**

The other characters are the same as in code page #437.

	8	9	A	B	C	D	E	F
0			ò	ı	ó			
1			À	ó	À	ó		
2			À	ó	À	ó		
3			À	ó	À	ó		
4			À	ó	À	ó		
5			À	é	À	é		
6			Ç	ú	ç	ú		
7			È	ú	è	ú		
8			È	ú	è	ú		
9			È	ú	è	ú		
A			È	ı	Ŕ	ı	°	
B			ı	ı	ı	ı	ı	
C			ı	ı	ı	ı	ı	
D			ı	ı	ı	ı	ı	
E			ı	ı	ı	ı	ı	
F			ı	ı	ı	ı	ı	

**Code Page #852
Latin-2**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	Á	␣	Ł	đ	Ó	°
1	ü	æ	İ	␣	ł	Đ	β	°
2	é	Ê	Ó	␣	Ť	Đ	ó	°
3	À	ò	ú	|	†	Đ	Ŕ	°
4	È	ø	Ë	†	-	Đ	ŕ	°
5	á	ó	Ŕ	†	†	Đ	ŕ	°
6	À	ú	Ġ	†	†	Đ	ŕ	°
7	ç	è	É	†	†	Đ	ŕ	°
8	ê	ë	İ	†	†	Đ	ŕ	°
9	è	é	Ŕ	†	†	Đ	ŕ	°
A	é	ê	Ŧ	†	†	Đ	ŕ	°
B	ÿ	ç	Ê	†	†	Đ	ŕ	°
C	ı	ı	Ë	†	†	Đ	ŕ	°
D	ı	ı	ı	†	†	Đ	ŕ	°
E	ı	ı	ı	†	†	Đ	ŕ	°
F	ı	ı	ı	†	†	Đ	ŕ	°

Code Page #1001
Arabic

	D	I	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	(001)			ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش
1	(001)	!	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ط
2	(001)	"	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ظ
3	(001)	#	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ع
4	(001)	\$	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ف
5	(001)	%	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ق
6	(001)	&	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ك
7	(001)	'	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ل
8	(001) (000)	(	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	م
9	(001) (000)	)	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ن
A	(001)	*	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	هـ
B	(001) (000)	+	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	و
C	(001) (000)	,	<	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش
D	(001)	-	=	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش
E	(001)	.	>	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش
F	(001)	/	ا	ب	ت	ث	ج	ح	خ	د	ذ	ر	ز	س	ش	ي

Code Page #737
Greek

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Α	Ρ	Ϸ	ϸ	Λ	Μ	υ	Ϻ
1	Β	Σ	η	Ϲ	⊥	Ϝ	ά	±
2	Γ	Τ	λ	Ϻ	⊥	Ϝ	έ	⊥
3	Δ	Υ	μ	⊥	⊥	⊥	ή	⊥
4	Ε	Φ	ν	⊥	⊥	⊥	ι	Υ
5	Ζ	Χ	ξ	⊥	⊥	⊥	ο	⊥
6	Η	Ψ	ο	⊥	⊥	⊥	ό	⊥
7	Θ	Ω	π	⊥	⊥	⊥	ύ	⊥
8	Ι	α	ρ	⊥	⊥	⊥	ώ	⊥
9	Κ	β	σ	⊥	⊥	⊥	·	⊥
A	Λ	γ	ς	⊥	⊥	⊥	Α	⊥
B	Μ	δ	τ	⊥	⊥	⊥	Ε	⊥
C	Ν	ε	υ	⊥	⊥	⊥	Η	⊥
D	Ξ	ς	φ	⊥	⊥	⊥	Ι	⊥
E	Ο	η	χ	⊥	⊥	⊥	Ο	⊥
F	Π	θ	ψ	⊥	⊥	⊥	Υ	⊥

Code Page #851
Greek

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	Ι	Ϸ	ϸ	Λ	Τ	ς	-
1	Ù		Ϸ	ϸ	⊥	Υ	η	±
2	é	D	ó	⊥	⊥	Φ	θ	υ
3	á	ó	ó	⊥	⊥	Χ	ι	φ
4	ä	ö	Α	⊥	⊥	Ψ	λ	ς
5	á	Υ	Β	Κ	⊥	Ω	μ	ς
6	À	α	Γ	Δ	Π	α	ν	ψ
7	ç	α	Ε	Ν	⊥	β	γ	·
8	é	ó	Ε	Ν	⊥	υ	ξ	°
9	ê	ó	Ζ	⊥	⊥	ο	·	·
A	è	ó	Η	⊥	⊥	ρ	ω	·
B	ÿ	á	Θ	⊥	⊥	σ	υ	·
C	í	ε	Θ	⊥	⊥	τ	σ	·
D	È	é	Ι	⊥	⊥	=	ς	·
E	Χ	ή	κ	⊥	⊥	ε	τ	·
F	Η	ι	κ	⊥	⊥	Σ	·	·

**Code Page #869
Greek**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0		Ι	Υ	Ϛ	ϛ	Ϝ	ϝ	Ϟ
1		Υ	Υ	Ϛ	ϛ	Ϝ	ϝ	Ϟ
2		Ο	ο	Ϛ	ϛ	Ϝ	ϝ	Ϟ
3			ο	|	|	Χ	ϛ	Ϝ
4			Α	|	-	Ψ	κ	Χ
5		Υ	Β	Κ	Α	Ω	λ	Σ
6	λ	Υ	Γ	Λ	Μ	Π	μ	ν
7		Φ	Δ	Μ	Ν	Ξ	β	γ
8	·	Β	Ε	Ν	Μ	Ξ	υ	Ϛ
9	τ	·	Ζ	Η	Θ	Ι	ο	·
A	ι	·	Η	Θ	Ι	Κ	κ	υ
B	·	α	β	γ	δ	ε	ε	ο
C	·	ε	θ	υ	φ	σ	σ	ο
D	Ε	ε	Ι	Σ	=	δ	ς	ο
E	-	η	α	Ο	=	ε	τ	·
F	Η	ι	ο	γ	Σ	·		

**Code Page #928
Greek**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0			°	Ϛ	Π	Ϛ	κ	
1		·	±	Α	Ρ	α	ε	
2		·	·	Β		β	ς	
3		ε	·	Γ	Σ	γ	σ	
4				Δ	Τ	δ	τ	
5					Ε	Υ	υ	
6		ι	Α	Ζ	Φ	ξ	φ	
7		ς	·	Η	Χ	η	χ	
8			Ε	Θ	Ψ	θ	ψ	
9		ο	Η	Ι	Ω	ι	ω	
A				Ι	Κ	Υ	κ	υ
B			α	ο	Λ	Υ	λ	υ
C			γ	ο	Μ	α	μ	ο
D				β	Ν	ε	ν	ο
E				Υ	Ξ	η	ξ	ο
F			-	Ω	Ο	ι	ο	

**Code Page #2001
Lithuanian-KBL**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Α	Ρ	α	β	γ	δ	ε	ζ
1	Β	Σ	β	γ	δ	ε	ς	ε
2	Γ	Τ	γ	δ	ε	ζ	η	θ
3	Δ	Υ	δ	ε	ζ	η	θ	ι
4	Ε	Φ	ε	ζ	η	θ	ι	κ
5	Ε	Χ	ε	ζ	η	θ	ι	ς
6	Ζ	Ψ	ζ	η	θ	ι	κ	λ
7	Ζ	Ω	ζ	η	θ	ι	κ	λ
8	Η	Ω	η	θ	ι	κ	λ	μ
9	Θ	Ω	θ	ι	κ	λ	μ	ν
A	Κ	Ω	κ	λ	μ	ν	ξ	ο
B	Λ	Ω	λ	μ	ν	ξ	ο	π
C	Μ	Ω	μ	ν	ξ	ο	π	ρ
D	Ν	Ω	ν	ξ	ο	π	ρ	σ
E	Ο	Ω	ο	π	ρ	σ	τ	υ
F	Π	Ω	π	ρ	σ	τ	υ	φ

**Code Page #772
Lithuanian**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Α	Ρ	α	β	γ	δ	ε	ζ
1	Β	Σ	β	γ	δ	ε	ς	ε
2	Γ	Τ	γ	δ	ε	ζ	η	θ
3	Δ	Υ	δ	ε	ζ	η	θ	ι
4	Ε	Φ	ε	ζ	η	θ	ι	κ
5	Ε	Χ	ε	ζ	η	θ	ι	ς
6	Ζ	Ψ	ζ	η	θ	ι	κ	λ
7	Ζ	Ω	ζ	η	θ	ι	κ	λ
8	Η	Ω	η	θ	ι	κ	λ	μ
9	Θ	Ω	θ	ι	κ	λ	μ	ν
A	Κ	Ω	κ	λ	μ	ν	ξ	ο
B	Λ	Ω	λ	μ	ν	ξ	ο	π
C	Μ	Ω	μ	ν	ξ	ο	π	ρ
D	Ν	Ω	ν	ξ	ο	π	ρ	σ
E	Ο	Ω	ο	π	ρ	σ	τ	υ
F	Π	Ω	π	ρ	σ	τ	υ	φ

**Code Page #774
Lithuanian**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	Á	⋮	Ł	ą	ą	≡
1	Ù	æ	İ	⋮	ł	ę	β	±
2	é	Æ	ó	⋮	Ť	ę	Γ	ł
3	á	ò	ú	|	ł	é	π	ı
4	â	õ	ñ	|	-	ı	Σ	"
5	ã	ô	ŕ	A	ı	š	σ	+
6	ä	ö	š	C	U	ų	μ	τ
7	ç	ÿ	ž	E	U	ž	φ	°
8	è	ÿ	ž	B	U	ž	φ	°
9	é	ÿ	ž	B	U	ž	φ	°
A	ê	ÿ	ž	B	U	ž	φ	°
B	ÿ	ÿ	ž	B	U	ž	φ	°
C	ÿ	ÿ	ž	B	U	ž	φ	°
D	ÿ	ÿ	ž	B	U	ž	φ	°
E	ÿ	ÿ	ž	B	U	ž	φ	°
F	ÿ	ÿ	ž	B	U	ž	φ	°

**Code Page #3001
Estonian1**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	Á	⋮	Ł	ą	ą	≡
1	Ù	æ	İ	⋮	ł	ę	β	±
2	é	Æ	ó	⋮	Ť	ę	Γ	ł
3	á	ò	ú	|	ł	é	π	ı
4	â	õ	ñ	|	-	ı	Σ	"
5	ã	ô	ŕ	A	ı	š	σ	+
6	ä	ö	š	C	U	ų	μ	τ
7	ç	ÿ	ž	E	U	ž	φ	°
8	è	ÿ	ž	B	U	ž	φ	°
9	é	ÿ	ž	B	U	ž	φ	°
A	ê	ÿ	ž	B	U	ž	φ	°
B	ÿ	ÿ	ž	B	U	ž	φ	°
C	ÿ	ÿ	ž	B	U	ž	φ	°
D	ÿ	ÿ	ž	B	U	ž	φ	°
E	ÿ	ÿ	ž	B	U	ž	φ	°
F	ÿ	ÿ	ž	B	U	ž	φ	°

**Code Page #3002
Estonian2**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0					•	À	Š	š
1			ı	±	À	Ŕ	š	ŕ
2			ç	²	À	ò	š	ó
3			£	³	À	ó	š	ó
4			π	´	À	õ	š	ó
5			¥	µ	À	ö	š	ó
6			ı	¶	À	õ	š	ó
7			§	•	Ç	×	ç	+
8			"	,	B	Ø	ø	φ
9			©	'	B	U	é	ú
A			®	®	B	U	é	ú
B			«	»	B	U	é	ú
C			¬	¼	ı	ı	ı	ı
D				½	ı	ı	ı	ı
E			•	¾	ı	ı	ı	ı
F			-	¿	ı	ı	ı	ı

**Code Page #3011
Latvian1**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	Ç	È	Á	⋮	Ł	ą	ą	≡
1	Ù	æ	İ	⋮	ł	ę	β	±
2	é	Æ	ó	⋮	Ť	ę	Γ	ł
3	á	ò	ú	|	ł	é	π	ı
4	â	õ	ñ	|	-	ı	Σ	"
5	ã	ô	ŕ	A	ı	š	σ	+
6	ä	ö	š	C	U	ų	μ	τ
7	ç	ÿ	ž	E	U	ž	φ	°
8	è	ÿ	ž	B	U	ž	φ	°
9	é	ÿ	ž	B	U	ž	φ	°
A	ê	ÿ	ž	B	U	ž	φ	°
B	ÿ	ÿ	ž	B	U	ž	φ	°
C	ÿ	ÿ	ž	B	U	ž	φ	°
D	ÿ	ÿ	ž	B	U	ž	φ	°
E	ÿ	ÿ	ž	B	U	ž	φ	°
F	ÿ	ÿ	ž	B	U	ž	φ	°

**Code Page #3012
Latvian2**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	р	Л	С	р	В
1	Б	С	б	с	Т	с	е	Г
2	В	Т	в	т	Т	с	Г	Г
3	Г	У	г	у	С	у	к	Г
4	Д	Ф	д	ф	Ф	Ф	К	Г
5	Е	Х	е	х	Т	Х	Л	Г
6	Ж	Ц	ж	ц	Ц	Ц	Л	Г
7	З	Ч	з	ч	Ч	Ч	Л	Г
8	И	Ш	и	ш	Ш	Ш	Л	Г
9	Я	Щ	я	щ	Щ	Щ	Л	Г
A	К	Ь	к	ь	Ь	Ь	Л	Г
B	Л	М	л	м	М	М	Л	Г
C	М	Ь	м	ь	Ь	Ь	Л	Г
D	Н	Э	н	э	Э	Э	Л	Г
E	О	В	о	в	В	В	Л	Г
F	П	Я	п	я	Я	Я	Л	Г

**Code Page #3021
Bulgarian**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	А	Р	а	р	Л	С	р	В
1	Б	С	б	с	Т	с	е	Г
2	В	Т	в	т	Т	с	Г	Г
3	Г	У	г	у	С	у	к	Г
4	Д	Ф	д	ф	Ф	Ф	К	Г
5	Е	Х	е	х	Т	Х	Л	Г
6	Ж	Ц	ж	ц	Ц	Ц	Л	Г
7	З	Ч	з	ч	Ч	Ч	Л	Г
8	И	Ш	и	ш	Ш	Ш	Л	Г
9	Я	Щ	я	щ	Щ	Щ	Л	Г
A	К	Ь	к	ь	Ь	Ь	Л	Г
B	Л	М	л	м	М	М	Л	Г
C	М	Ь	м	ь	Ь	Ь	Л	Г
D	Н	Э	н	э	Э	Э	Л	Г
E	О	В	о	в	В	В	Л	Г
F	П	Я	п	я	Я	Я	Л	Г

**Code Page #3031
Hebrew**

Other characters are the same as those for Code Page #437.

	8	9	A	B	C	D	E	F
0	א	ב	ג	ד	ה	ו	ז	ח
1	ט	י	כ	ל	מ	נ	ס	ע
2	פ	צ	ק	ר	ש	ת	י	כ
3	ל	מ	נ	ס	ע	פ	צ	ק
4	ר	ש	ת	י	כ	ל	מ	נ
5	ס	ע	פ	צ	ק	ר	ש	ת
6	י	כ	ל	מ	נ	ס	ע	פ
7	כ	ל	מ	נ	ס	ע	פ	צ
8	ל	מ	נ	ס	ע	פ	צ	ק
9	מ	נ	ס	ע	פ	צ	ק	ר
A	נ	ס	ע	פ	צ	ק	ר	ש
B	ס	ע	פ	צ	ק	ר	ש	ת
C	ע	פ	צ	ק	ר	ש	ת	י
D	פ	צ	ק	ר	ש	ת	י	כ
E	צ	ק	ר	ש	ת	י	כ	ל
F	ק	ר	ש	ת	י	כ	ל	מ

**Code Page #3041
Maltese**

Other characters are the same as those for Code Page #437.

	0	1	2	3	4	5	6	7
0	(00L)		0	0	P	0	p	
1		(001)	!	1	A	Q	a	q
2		(002)	"	2	B	R	b	r
3		(003)	#	3	C	S	c	s
4		(004)	\$	4	D	T	d	t
5		(005)	%	5	E	U	e	u
6		(006)	&	6	F	V	f	v
7	(00L)		'	7	G	W	g	w
8	(00S)	(008)	(	8	H	X	h	x
9	(00T)	(009)	)	9	I	Y	i	y
A	(00F)		*	:	J	Z	j	z
B	(00V)	(00C)	+	:	K	g	k	0
C	(00W)	(00S)	,	<	L	z	l	2
D	(00D)		-	=	M	h	m	H
E	(00O)		.	>	N	^	n	C
F	(00I)		/	7	O	_	o	

Appendix E: Printer Control Codes

This appendix lists the printer's control commands. It gives the name of each control command, along with the applicable emulation mode (Standard, IBM, or Both), and the applicable ASCII code.

Font and Character Set Control Commands

Description	Mode	ASCII Code
Printed data as characters	STD	ESC (^
Assign character table	STD	ESC (t
Select italic	STD	ESC 4
Cancel italic	STD	ESC 5
Select Character Set #2	Both	ESC 6
Select Character Set #1	Both	ESC 7
Select Draft 10 CPI	IBM	ESC I00H
Select Draft 12 CPI	IBM	ESC I08H
Select Draft 17 CPI	IBM	ESC I10H
Select LQ 10 CPI	IBM	ESC I02H
Select LQ 12 CPI	IBM	ESC I0AH
Select LQ 17 CPI	IBM	ESC I12H
Select Proportional LQ	IBM	ESC I03H
Select international character set	STD	ESC R <i>n</i>
Set Code Page	Both	ESC [T
Print characters from all character chart	IBM	ESC \n1 n2
Print one character from all character chart	IBM	ESC ^n
Select Standard Character Table	STD	ESC t0
Select IBM Character Table	STD	ESC t1
Set download characters in "00H - 7FH" area to "80H - FFH."	STD	ESC t2
Select Draft Mode	STD	ESC x0
Select LQ Mode	STD	ESC x1

Print Pitch Control Commands

Description	Mode	ASCII Code
Select one line expanded print	Both	SO
Same as SO	STD	ESC SO
Select condensed print	Both	SI
Same as SI	STD	ESC SI
Cancel condensed print	STD	DC2
Set print pitch to pica	IBM	DC2
Cancel one-line expanded print	Both	DC4
Set print pitch to elite	IBM	ESC :
Set print pitch to elite	STD	ESC M
Set print pitch to pica	STD	ESC P
Cancel proportional print	IBM	ESC P00H
Select proportional print	IBM	ESC P01H
Cancel expanded print	Both	ESC W0
Select expanded print	Both	ESC W1
Set print pitch to 15 CPI	STD	ESC g
Cancel proportional print	STD	ESC p0
Select proportional print	STD	ESC p1

Top/Bottom Margin and Vertical Tab Commands

Description	Mode	ASCII Code
Advance paper to next vertical tab position	Both	VT
Select VFU channels	STD	ESC /n
Set vertical tab positions	Both	ESC Bn...NULL
Set bottom margin	Both	ESC Nn
Cancel bottom margin	Both	ESC O
Set all tabs to power on defaults	IBM	ESC R
Set VFU in a channel	STD	ESC bnm...NULL

Special Print Mode Commands

Description	Mode	ASCII Code
Set master print mode	STD	ESC !
Cancel underlining	Both	ESC -0
Select underlining	Both	ESC -1
Select emphasized print	Both	ESC E
Cancel emphasized print	Both	ESC F
Select double-strike print	Both	ESC G
Cancel double-strike print	Both	ESC H
Select superscripts	Both	ESC S0
Select subscripts	Both	ESC S1
Cancel super/subscripts	Both	ESC T
Cancel upperlining	IBM	ESC _0
Select upperlining	IBM	ESC _1
Cancel character style mode	STD	ESC q0
Select outline print	STD	ESC q1
Select shadow print	STD	ESC q2
Select outline and shadow print	STD	ESC q3

Bit Image Graphic Commands

Description	Mode	ASCII Code
Select bit image mode	STD	ESC *m <i>n1 n2</i>
Redefine bit image mode	STD	ESC ?
8-pin single-density bit image	Both	ESC K <i>n1 n2</i>
8-pin double-density bit image	Both	ESC L <i>n1 n2</i>
8-pin double-density bit image, double-speed	Both	ESC Y <i>n1 n2</i>
8-pin quadruple density bit image	Both	ESC Z <i>n1 n2</i>
Select graphic mode	IBM	ESC [g

Line Spacing Commands

Description	Mode	ASCII Code
Advance paper one line (line feed)	Both	LF
Reverse paper one line	STD	ESC LF
Set line spacing to 1/8"	Both	ESC 0
Set line spacing to 7/72"	IBM	ESC 1
Set line spacing to 1/6"	STD	ESC 2
Execute ESC A	IBM	ESC 2
Set line spacing to $n/180''$ (STD/IBM), $n/216''$ (IBM), or $n/360''$ (IBM)	Both	ESC 3 <i>n</i>
Set line spacing to $n/360''$	STD	ESC + <i>n</i>
Set line spacing to $n/60''$	STD	ESC <i>n</i>
Define line spacing to $n/72''$	IBM	ESC <i>n</i>
One time feed of $n/180''$ (STD/IBM), $n/216''$ (IBM), or $n/360''$ (IBM)	Both	ESC <i>Jn</i>
Reverse line feed	IBM	ESC]
One time reverse feed of $n/180''$	STD	ESC <i>jn</i>

Form Feed and Related Commands

Description	Mode	ASCII Code
Advance paper to top of next page (form feed)	Both	FF
Reverse form feed	STD	ESC FF
Set top of form to current position	IBM	ESC 4
Set page length to n inches	Both	ESC C 00H <i>n</i>
Set page length to n lines	Both	ESC <i>cn</i>
Set base unit of line spacing ($n/180''$, $n/216''$, $n/360''$)	IBM	ESC [\

Download Character Commands

Description	Mode	ASCII Code
Cancel download character set	STD	ESC %0
Select download character set	STD	ESC %1
Define download characters in RAM	STD	ESC &00H

Horizontal Print Position Control Commands

Description	Mode	ASCII Code
Move print head to next horizontal tab position	Both	HT
Return print head to left margin (carriage return)	Both	CR
Move print head to absolute horizontal position	STD	ESC \$ <i>n1 n2</i>
Add <i>n</i> dot spaces between characters	STD	ESC SP <i>n</i>
Cancel automatic line feed	IBM	ESC 5 00H
Select automatic line feed	IBM	ESC 5 01H
Set horizontal tab positions	Both	ESC D <i>n</i> ..NULL
Set right margin	STD	ESC Q <i>n</i>
Set left and right margins	IBM	ESC X <i>n1 n2</i>
Move print head to specified horizontal position	STD	ESC \ <i>n1 n2</i>
Move print position to right	IBM	ESC d
Set left margin	STD	ESC l <i>n</i>

Other Commands

Description	Mode	ASCII Code
Sound printer bell	Both	BEL
Move printer head back one space (backspace)	Both	BS
Set printer on line	Both	DC1
Set printer off line	STD	DC3
Cancel line in print buffer	Both	CAN
Delete last character sent	STD	DEL
Control cut-sheet feeder	STD	ESC EM
Cancel MSB control	STD	ESC #
Select score	STD	ESC (-
One-line uni-directional printing	STD	ESC <
Set MSB to logical 0	STD	ESC =
Set MSB to logical 1	STD	ESC >
Initialize printer	STD	ESC @
Disable paper out detector	STD	ESC 8
Enable paper out detector	STD	ESC 9
Deselect printer	IBM	ESC Q <i>n</i>
Cancel uni-directional printing	Both	ESC U0

Other Commands (Continued)

Description	Mode	ASCII Code
Select uni-directional printing	Both	ESC UL
Control character height, width, line spacing	IBM	ESC [@
Set initial condition	IBM	ESC [K
Select 1 x 1, 2 x 2, 4 x 4 sized printing	STD	ESC h n
Stop printing	IBM	ESC j
Select type face	STD	ESC k n
Cancel double-high mode	STD	ESC w 0
Select double-high mode	STD	ESC w 1

NEC Commands

Description	Mode	ASCII Code
Set line spacing to $n/360''$	STD	FS 3 n
Initialize printer	STD	FS @
Select typeface	STD	FS C
Cancel expanded printing	STD	FS E 0
Select expanded printing	STD	FS E 1
Select expanded (triple-width) printing	STD	FS E 2
Select forward feed	STD	FS F
Select standard character table	STD	FS I 0
Select IBM character table	STD	FS I 1
Move download characters in 00H-7FH area to 80H-FFH	STD	FS I 2
Select reverse feed	STD	FS R
Cancel double-height mode	STD	FS V 0
Select double-height mode	STD	FS V 1
24-pin hex density bit image	STD	FS Z
Print characters from all character chart	STD	FS \
Print one character from all character chart	STD	FS ^

Appendix F: Glossary

adjustment lever

Controls the darkness of the printing by adjusting for the thickness of the paper you are printing on.

Centronics cable

Parallel cable normally used to connect the printer to the computer.

control code

A numeric code that instructs the printer to perform an operation. For example, the computer sends the printer a form feed control code (12) to tell it to eject the current page.

Electronic DIP Switch settings

Printer settings that take effect when you switch on the printer. You can change these settings using the control panel.

emulation

Ability of one printer to act like (emulate) another type of printer.

hexadecimal dump

Printout of all character codes and control codes as they are received by the printer, along with their hexadecimal values.

multi-part forms

Forms that consist of more than one sheet. This printer can print on forms that have up to seven sheets.

LQ font

Letter-quality font.

off-line

Printer mode in which the printer will not accept data or continue printing.

on-line

Printer mode in which the printer is ready to print.

paper parking

Moving fanfold paper into a position that allows printing of cut-sheets without removing the fanfold paper from the printer.

print head

The component of the printer that transfers the image to the paper.

Quiet mode

Mode that reduces printing noise. Also reduces printing speed.

release lever

Releases the paper. This lever must be in the cut-sheet position for cut-sheet paper and in the fanfold position for fanfold paper.

serial-to-parallel interface converter

Option that makes it possible to connect the printer to a computer via a serial interface instead of the standard Centronics parallel interface.

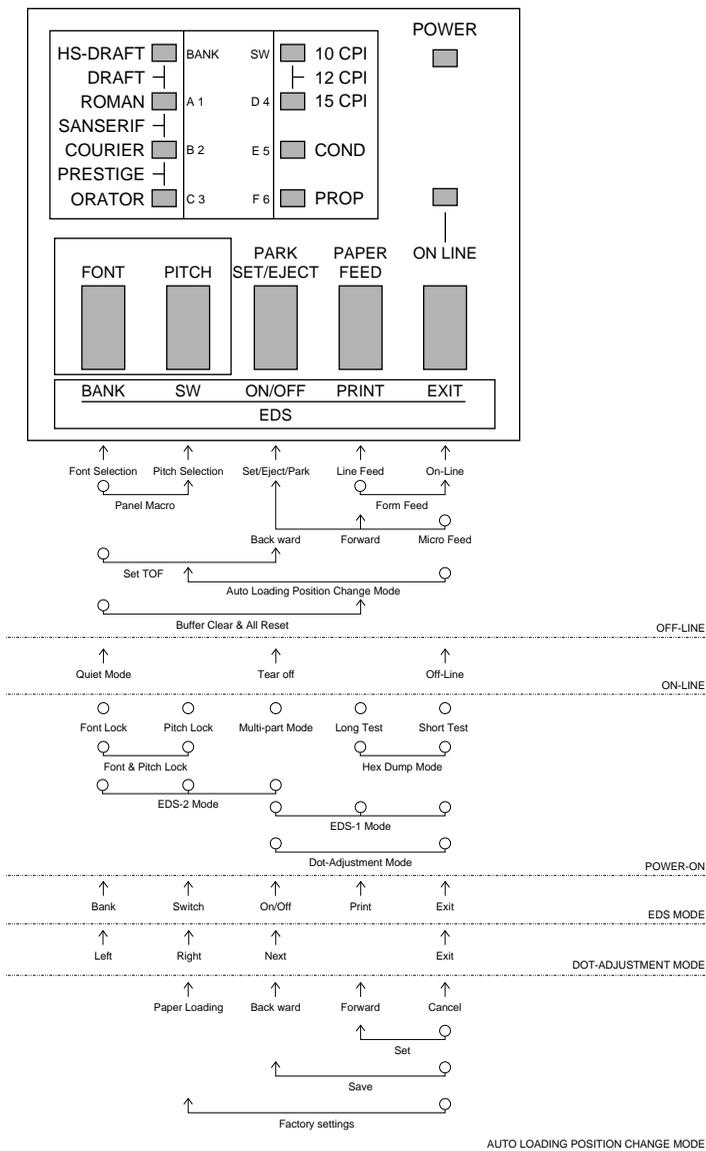
tear-off function

Function that moves fanfold paper to a position where it can be torn off.

tractors

Mechanisms that control the movement of fanfold paper.

Appendix G: Control Panel Operation Guide



Note:

A dot means press and hold and an arrow means to just press. A dot and arrow tied together means hold one while pressing the other.

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Customer service information

If you experience any technical difficulties with your Star printer, please refer to Appendix A How to deal with printing problems. This chapter describes easy methods to diagnose and resolve some of the problems that you may encounter.

For further technical support, you should first contact your Authorized Star Dealer. If you require additional support, Star Micronics offers a wide variety of technical support services. Please use one of the telephone numbers listed below, depending on the country in which your Star printer was purchased.

Star Micronics Technical Hotline:

North America:	1-908-572-3300
United Kingdom:	44-1277-232036
Hong Kong:	852-2795-2335
Australia:	61-2-748-4300
New Zealand:	64-9-570-1470

Star Micronics FaxBack (Document Retrieval) System:

Requires access to a facsimile machine or board with receive capability

North America:	1-908-572-4004
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Star Micronics Bulletin Board Service:

Requires a computer modem

North America:	1-908-572-5010
United Kingdom:	44-1494-461395
France:	33-1-305807
Germany:	49-69-780929
Netherlands:	31-73-424485
Australia and New Zealand:	61-2-748-2960

Customer response

Star Micronics Co., Ltd. invites your suggestions and comments on your printer and this manual. Please address your correspondence to Attn: Product Manager

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